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The Junior College and High School Curriculums

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JUDGED by past experience, there comes in the career of each Editor of *Junior College Journal* at least one irresistible temptation to editorialize on the topic, "Is the junior college a part of secondary or higher education?"¹ Moreover, the positive correlation between the appearance of these editorials and the Fall season might lead one to believe that some element in the crisp autumn air is related to this irresistible temptation.

Some have commented that the controversy over this topic is of academic significance only, and hence is not worthy of consideration. Such a dismissal of further discussion is not warranted. Classifications are of significance in defining the nature and function of institutions. Failure to recognize this principle can be productive of serious problems.

The marshaling of logical arguments to support one classification or the other, however, sometimes obscures related problems of equal importance. One such problem involves articulation of the junior college curriculum with the high school curriculum and with the curriculum of the four-year college.

Junior college administrators have long been aware of the necessity for articulating junior college courses with the courses in the four-year institutions to which

some of their students will transfer. Administrators who have been careless in this matter have frequently learned that such carelessness can be costly.

Much less attention has been given, however, to tying the junior college curriculum in with the curriculums of the high schools from which the junior college students come. There are several hypotheses which might explain this neglect. One involves the lack of pressure from the high schools corresponding to the pressure which four-year colleges exercise.

A second hypothesis to explain the lack of attention given to articulating the junior college and high school curriculums involves the close association existing between many of these units. When staffs, buildings, and facilities are shared by high schools and junior colleges, there will be automatically a certain amount of informal articulation. In line with this hypothesis, it follows that the more completely separated the high school and junior college are, the less will be the opportunity for tying the two curriculums together.

¹Eells, Walter Crosby, "Secondary or Higher Education," *Junior College Journal*, XI (October, 1940), 63-64.

Koos, Leonard V., "Is the Junior College Secondary or Higher Education," *Junior College Journal*, XVIII (November, 1947) 113-114.

Privately controlled junior colleges have less chance for such informal articulation. Probably, the opportunity will be greatest when they are organized as four-year junior colleges.

The opportunity for informal curriculum articulation, however, is decreasing. If one assumes that the opportunity is greatest in those public junior colleges classified as "local," and least in those classified as "district," "county," or "state," the evidence of the decrease is clear. In the case of the private junior colleges, there is not much evidence of change.

During the school year 1939-1940, the first year for which data are available, 63 per cent of the 278 public junior colleges listed in the *Junior College Directory* were classified as "local," and the remaining 37 per cent were classified as "district," "county," or "state." In the same period, 4.9 per cent of the private junior colleges were classified as three or four-year colleges, while 95.1 were one or two-year colleges.

In the most recent *Junior College Directory*, based on the school year 1948-1949, 37 per cent of the public junior colleges were classified as "local," while 63 per cent were classified as "district," "county," or "state." This represents an exact reversal of the previous status. 5.3 of the private junior colleges were three or four-year institutions, while 94.7 were one or two-year colleges.

These facts indicate the chances

for informal articulation of the junior college and high school curriculums have been reduced materially. Unless it can be demonstrated that there is no need for articulation, it behooves junior college and high school leaders to devise some substitute methods for meeting this need.

One such method is the organization of conferences including faculty and administrative representatives from both levels. These conferences will succeed if the representatives meet to attack common problems, but will likely fail if the conference involves representatives from one level dictating a program to the others.

The opportunity for conducting such conference is becoming increasingly greater as four-year colleges liberalize their transfer requirements. Less attention needs to be given to articulation of the junior college curriculum with the curriculum of the four-year college.

Finally, such conferences are, as many junior college administrators have already found, excellent public relations. As the concept of the community junior college grows, greater attention must be given to this factor.

It is to be hoped that in light of this summary of the type of thinking which is going on in many junior colleges, there will be an increase in these junior college-high school conferences. It is certain that the individual student will be the ultimate beneficiary.

Industrial Training in Junior Colleges

C. E. TURNER

A STUDY of the development and status of industrial training has recently been completed to serve as a basis for constructing a state program of industrial education in Idaho. Since information about this development and status has long been needed, the data and professional comments collected in the study are of significance in satisfying this need. Moreover, when a summary of this study was presented to fifty state supervisors and teacher trainers in industrial education meeting at Los Angeles in March, 1950, much professional interest was manifested in the report. Since any development of vocational industrial training in junior colleges will often involve the cooperative efforts of the state departments of vocational education and junior college administrators, it is believed this information will be valuable to both groups.

A questionnaire was prepared and sent to the following states: California, Washington, Wyoming, Montana, Utah, Arizona, Idaho, Colorado, Texas, Illinois, Michigan, Tennessee, Pennsylvania, Ohio, Michigan, and Minnesota. This group of states included not only all states reporting junior college industrial programs to the United States Office of Education in 1949, but other selected states.

The questionnaire included the eight questions listed in Table I. In addition, each state supervisor of trade and industrial education was asked to summarize his opinion of vocational trade and industrial education in the junior college. It was suggested that an estimate of enrollment in trade and industrial classes would be suitable for a reply, since the constantly changing enrollments prevent complete accuracy.

In 1949 the following junior colleges reported vocational trade and industrial classes which qualified for federal trade and industrial money: *California*: Fresno, Reedley, Lassen (Susanville), Compton, El Camino, Glendale, Long Beach, East Los Angeles, Los Angeles, Mt. San Antonio, Pasadena, Santa Monica, Marin (Kentfield), Salinas, Napa, Fullerton, Santa Ana, Placer, Riverside, Grant Technical, Sacramento, Chaffey, San Bernardino Valley, San Francisco, San Diego, Stockton, San Mateo, Santa Barbara, Vallejo, Modesto, Visalia, and Ventura Junior Colleges; *Colorado*: Pueblo, Sterling, and Trinidad Junior Colleges; *Idaho*: Boise and North Idaho Junior Colleges; *Michigan*: Highland Park and Gogebic Junior Colleges; *Minnesota*: Duluth Junior College; *Texas*: Kilgore and Paris Junior Colleges; *Wyoming*: Casper Junior College.

The total number of junior colleges reporting trade and industrial programs to the United States Office of Education in 1949 was forty-four. Thirty-three of these junior colleges were in California, three in Colorado, two in Idaho, two in Michigan, two in Texas and one in Minnesota, and one in Wyoming.

Table I shows a summary of the replies from the states reporting junior college industrial training programs in March, 1950. It might be well to explain the meaning of certain of the questions, since some of the terms used have special meanings in industrial education.

1—"How many junior colleges operate pre-apprentice or pre-employment vocational trade and industrial programs in your state?"

A pre-apprentice or pre-employment program is a program in which students are learning skills of trade or industrial occupations and the related work of that occupation in order to enter employment. This may not be a high level skill, but it is a level at which the learner is worth wages to an employer. This pre-apprentice or pre-employment program, involving at least a fifteen hour week craft training schedule, is more likely to be a twenty hour per week program, and in many cases is from thirty to thirty-six hours per week in actual, specific craft or industrial training.

In order to qualify as a "vocational trade and industrial training program," the training must

be "of less than college grade. It must be planned and operated with the purpose of preparing people for employment, or improving them in the occupational skills, related information, and other assets of their occupation." The objective of a qualifying trade and industrial program must never be to get college credits leading toward a professional college degree.

3—"How many junior colleges in your state operate trade extension programs?"

A trade extension program is one in which employed workers are returning to school for further training within their occupations. The classes may operate in an industrial plant if convenient. The instruction given must improve the worker's value to the employer.

4—"Which program do you consider more efficient—high school pre-apprentice, or junior college level pre-apprentice?"

This question sets up a comparison between the junior college and the high school as an industrial training agency. It was included because vocational educators and others are concerned with the comparative efficiency in the expenditure of money between high school and junior college pre-employment training. The question also implied a comparison between the trade training of youth of high school age and those of post high school age.

5—"Do you get better placement from a high school type pre-apprentice program, or a junior

TABLE I STATUS OF JUNIOR COLLEGE INDUSTRIAL EDUCATION PROGRAMS, MARCH 1950

Summary of Replies from State Superintendents of Trade and Industrial Education										
Aspects of Program	Ariz- ona	Calif- ornia	Colorado	Idaho	Pennsyl- vania	Texas	Utah	Washing- ton	Wy- oming	Total
How many junior col- leges operate pre-ap- prentice or pre-employ- ment vocational trade and industrial pro- grams?	1	32	6	2	1	8	5	4	1	60
How many pre-employ- ment classes in junior colleges?	1	303	16	8	4	40	22	15	4	413
How many junior col- leges in state operate trade extension pro- grams?		28	5	2	1	15	2	5	1	59
How many trade ex- tension classes in junior colleges?		705	30	11	1	124	52	25	12	960
Which program con- sidered more efficient: High school pre-ap- prentice or junior col- lege level pre-appren- tice?	High School	Junior College	No dif- ference	Junior College	Junior College		Junior College	Junior College	Junior College	
Is better placement ob- tained from high school type pre-apprentice pro- gram or junior college type pre-apprentice pro- gram?		Junior College		Junior College	Junior College	Junior College	Junior College		Junior College	
Would tradesmen rather go to a junior college or to high school for trade extension train- ing?		Junior College	No dif- ference	Junior College	Junior College	Junior College	Junior College	No dif- ference	No dif- ference	
Is it found that junior college fees are a handi- cap in operating trade and industrial train- ing?	No	No	Yes	Yes	No fee	Yes	No	Yes	No	

college type pre-apprentice program?"

This question basically sets up a placement comparison of boys of high school graduation age and those who are two years older. Many factors are involved in this question. Some of the many factors which enter into the placement question are maturity of the student, interest of the student, type and quality of instruction, concentration of instruction, and shop equipment.

6—"Would tradesmen rather go to a junior college for trade extension training or to a high school?"

This question involves the feeling of the employed worker toward the junior college and toward the high school.

7—"Do you find that junior college fees are a handicap in operating trade and industrial training?"

This question was included because there has been a rather widespread comment that junior colleges expect to pay the cost of trade and industrial training from the fees collected and that many junior colleges have felt that if trade and industrial training is included in the curriculum it must be self-supporting. The replies are opinions expressed without editorial comment.

The following opinions of trade and industrial supervisors who commented on trade and industrial education in the junior college are of particular interest.

These replies constitute source comments from all of the state supervisors who are working with junior college programs, and have supervisory control of the entire trade and industrial program in their respective states. Their supervision includes high school programs in trade and industrial education, junior college programs, programs in vocational schools, programs of teacher training, and trade extension classes for employed workers. In most instances, they hold the title of state supervisor of trade and industrial education.

ARIZONA — Edwin C. Gracey

There are only two junior colleges in the state of Arizona — Phoenix Junior College located at Phoenix, and Gila Junior College located at Thatcher. One pre-employment course is offered at Gila Junior College in Auto Mechanics. No trade extension classes are conducted by either of the junior colleges.

We feel that high schools are in a better position to offer pre-apprentice programs than are junior colleges. Since only one junior college is conducting pre-apprentice training, it is difficult to compare the placement in high schools and junior colleges.

There is little difference in the fees required by the junior college and that collected by high schools in the field of industrial education.

CALIFORNIA — Samuel L. Fick

The junior college program has

been operating very satisfactorily for vocational classes in trade and industrial education in this state. Students are older and they have had greater opportunity to choose the occupation they desire to follow. There is less likelihood for drop-outs and turn-over. On completing their courses they are old enough for industrial employment.

The financing of the junior colleges of this state does not prove to be a handicap. Thus far our junior colleges have not in any way tended to drift from the vocational objectives of the trade and industrial program. This may be due to the philosophy we have continually striven for in the field of vocational education.

The Frank Wiggins Trade-Technical Institute has recently become the Los Angeles Trade-Technical Junior College. Previously this school operated as a high school. There is no tendency for this school to change from its original objective, which was that of sound vocational training. The program permits the students to enter the junior college and work towards an Associate of Arts degree, or they can take a part-time trade preparatory program, or a trade extension program in the same manner as they have always been able to do.

In some of the junior colleges in our state, arrangements have been made for apprentices to receive credit for their related instruction toward their Associate of Arts degree, and by completing

the minimum requirement for this degree established by the State Board of Education, they may receive credit for their entire related subjects program and receive the Associate of Arts degree through the evening junior college program.

I have been asked by a number of vocational people from other states as to whether our junior colleges have attempted to make "ivy towers" of our vocational programs, and I have assured them that this is not the case. Thus far there is no tendency in this direction. I am speaking now of the *bona fide*, qualifying trade training courses. I am not at all sure what will happen when we go more into the technical type courses, which are not actually trade training but *are* in the field of vocational education. We have a few of these programs operating and would like to have more.

COLORADO — William Flannery

Junior college programs of industrial training are very effective. However, I feel that the fee which is required of junior college students has caused us to lose many students who would otherwise be taking industrial training, both pre-employment and evening trade extension. This is especially true in the trade extension program.

IDAHO — C. E. Turner

We are finding trade and industrial education programs which have been initiated recently in the two Idaho junior colleges satisfactory. The two junior colleges

may develop as area trade schools. There is hesitation on the part of the state legislature to make a special appropriation for such development because the junior colleges are local institutions and rather vaguely connected with the State Board of Education.

Both junior colleges, at Boise and Coeur d'Alene, feel high responsibility for operation as community colleges in addition to serving as the first two years of a university professional course. Neither college has a high school graduation requirement for entrance to the industrial division.

All trade and industrial pre-employment courses in junior colleges operate at least thirty hours per week. The policy is to prepare pre-employment students for industrial employment as soon as possible. After completing the pre-employment training program, if the student wants cultural or other non-vocational courses, he may enroll for them.

Trade and industrial pre-apprentice students at Boise Junior College attend junior college classes five hours weekly in Safety, Materials of Industry, English for Industrial Students, Industrial Mathematics, and Shop Sketching, in addition to the thirty hour trade program.

In Idaho there is another program which is of the junior college type, although it is operated by the

Idaho State College. There are 230 students taking trade-industrial training, thirty hours weekly at Idaho State College. They are taking no other college classes, do not receive college credit, and are actually enrolled in a vocational school operated by Idaho State College. There are fourteen pre-employment trade classes operating.

PENNSYLVANIA — Robert T. Stone

If the junior colleges would serve as community institutes and remain as such, they would capture the extension education field; however, they always become collegiate by joining associations of colleges and aspiring to academic standards. I join you in promoting the community institute (13th and 14th year) terminal programs.

TEXAS—W. R. Cate

We operate only type B day trade programs¹ in high schools and only type A programs² in junior colleges. The greatest difference in the programs seems to result from the differences in students — age, marital status (pending, perhaps), and the result of more mature interests in training. The high school programs serve as pre-apprentice training, but the output of junior colleges usually follows a course that either skips apprenticeship or results in full credit on an apprenticeship. Texas has thirty-six public junior colleges, ten of which offer some type of trade and industrial training. At least five additional institutions

¹Type "B" day trade programs operate fifteen hours weekly.

²Type "A" day trade programs operate twenty hours or more weekly.

are ready to add trade and industrial training and are awaiting action by the State Board of Vocational Education.

In regard to question 5, we try to operate the junior college program so that it will supplement training given in high schools, and because of the differences in the type A and B programs, they are difficult to compare without reservations. We think type B programs are more efficient for high schools.

UTAH—Von H. Robertson

There is a definite trend in Utah toward moving trade and industrial education up beyond high school. In all our programs the majority of day students are post high school. Our junior colleges at Price, Ephraim, and St. George enroll high school students in trade and industrial classes, but they are in the minority. Our two vocational schools have agreements with school districts to train high school students. The average enrollment is 15% high school students, 85% post high school, or junior college students.

Our paramount problem is that of terminal and transfer credit. We have been criticized for operating type B trade and industrial classes in the junior colleges with half day of regular college work. We would like a plan developed under which we can conduct full time trade and industrial courses, record the training, and have transfers made based on full time industrial training.

WASHINGTON—H. N. Miller

I have checked the questions but certainly feel that my answers should have some explanation.

In this state we have nine junior colleges and have comparatively few classes in trade and industrial education operating in them. Two-thirds of the trade and industrial classes conducted in junior colleges on a pre-employment level are in one junior college. Five of the junior colleges have no pre-employment trade and industrial classes, and four of them have no trade extension classes. The districts in which our best trade and industrial programs in junior colleges are conducted are those districts in which the trade and industrial classes are under the direction of a qualified vocational director. In the other areas we have no trade and industrial programs operating in junior colleges.

We feel that our most effective and efficient vocational programs are those that operate on a post high school basis in those centers having separate vocational schools. Of course, this can be accomplished only in our larger industrial centers.

We have had considerable reaction by trades people to the fee charged for apprentices taking related instruction at junior colleges. None of the high schools or trade schools charges a tuition fee for apprenticeship classes as they draw extra attendance money and also receive some federal funds in addi-

tion to basic attendance for vocational students.

Since junior college students are a year or two older, placement is somewhat better for junior college students than for high school students. The average age of our trade school students, however, is as high as those of the junior college students, and the placement is on a par with junior college trade students.

WYOMING—Sam Hitchcock

Wyoming has only one junior college, located at Casper. Since the college was started several years ago it has carried on a successful trade and industrial program. There is a local director employed by the college who organizes and supervises these courses.

Last year the Casper Junior College had courses in Mud School, Accident Prevention, Carpentry, Instrumentation, Industrial Geology, Drafting, Plumbing, Welding, Auto Mechanics, Machine Shop, Blueprint Reading, Electricity, and Painting. We had a total enrollment of 548 in these classes.

I am well satisfied with all classes which have been conducted by Casper Junior College.

MICHIGAN—H. J. Westrienen

We have a number of junior colleges in Michigan, all of which have been essentially academic in nature. Two or three of them include cooperative office training programs in their offerings, and in one or two instances, they have taken steps to introduce terminal

vocational and adult education courses. Several of them are giving this matter serious thought, and we hope that there will be substantial offerings in the field of trade and industrial education within the next two or three years.

Conclusion

It will be noted that the leading state in the use of the junior college as an industrial training agency is California. It is also evident that the junior college as a trade and industrial training school is largely a western institution. It may also be noted that there are certain problems involved in operating trade and industrial programs in some junior colleges, such as a tendency in a few instances to operate a junior college solely as a pre-university institution, and the feeling that a vocational training program is a little bit out of line with the basic purpose of the junior college. The philosophy in a great many western junior colleges is that the function of the junior college is not only pre-university or academic, but that it also must serve as a community institution, including the responsibility of preparing young people for useful employment in other than professional fields.

The 1949 report of the United States Office of Education shows forty-four junior colleges reporting vocational trade and industrial classes. We find that there are now approximately seventy junior colleges conducting vocational training programs in trade and indus-

trial education, on either pre-employment or a trade extension basis, or both. The total number of courses operating during the present year is approximately 1373. This would indicate an enrollment of about fifteen thousand students in trade and industrial education in the junior colleges.

A summary of opinions as expressed in the tabulation of replies indicates a strong feeling that the

junior college is an excellent institutional medium for industrial training, that placement from well operated junior college vocational industrial training programs is good, that employed people like to take extension training at a junior college, and that the fee system has been a deterrent in some states.

There is an active trend toward an increase of vocational industrial training in junior colleges.

Exploring Teaching as a Career With Junior College Students

GORDON D. AUMACK AND CORNELIUS H. SIEMENS

In the fall of 1948 Compton College, Compton, California, organized and offered for the first time an exploratory course designed to furnish information about teaching as a career and to help prospective teachers understand the work and life of the classroom. The present article describes the course which was developed, records certain reflections upon the two years of experience with it, and presents a sampling of evaluative comments made by students who took it.

The need for such a course at Compton arose from two related facts. First, there was in California a pressing demand for teachers, particularly for elementary school teachers, so that the schools could care for the tremendous growth of the state's school population. Second, students in Compton College began wanting to know about teaching, what it was like as a profession. Their interest was no doubt intensified by the campaign about them for more teachers in the state.

After careful consideration and with the approval of the State Department of Education, the course was titled "Introduction to Education." It was set up as a two-semester hour course, scheduled to meet two clock hours a week for one semester.

Purpose of the Course.—The ex-

ploratory course was designed to "help prospective teachers understand the work and life of the classroom." Its more specific aims were to help students gain the following:

1. Knowledge and understanding of current philosophies and attitudes about American education and the teaching profession.
2. Understandings of the major objectives and the social character of public education.
3. Knowledge of what characteristics, qualities, and personal traits are essential in a successful teacher.
4. Knowledge of the place of the teacher in the framework of public education.
5. Some appreciations and understandings of the learning process.
6. An appreciation of the necessity for knowing well the learners as individuals and as a group.
7. Knowledge of what is expected of a teacher on the elementary, junior high school, senior high school, and junior college levels as expressed by local administrators in the field.
8. Recognition of the hardships and the rewards offered by teaching as a profession.
9. Knowledge about and some

understandings of the problem areas of public education—national, state, and local.

Scope of the Course.—In order to accomplish the aims outlined, the course was organized to treat the basic list of topics given below. Time remaining was given over to additional topics suggested or requested by the class.

1. The philosophies of education
2. Teaching as a profession
3. The teacher as a person
4. The teacher as a counselor
5. The learning process
6. Understanding the learner
7. Classroom teaching methods
8. Audio-visual methods in teaching
9. The elementary teacher
10. The junior high school teacher
11. The senior high school teacher
12. The junior college teacher
13. What the community expects of the teacher
14. California public education
15. Aims of public education
16. Financing public schools in California

On the calendar for the course, class meetings for the first nine weeks were booked solidly with these topics. As a part of the mid-term examination, students were asked to indicate what they thought of the course and to list topics which they wished to have discussed during the remaining half of the semester.

Course Procedure.—In the class

hours the listed topics were presented and discussed. Procedures included lectures by the instructors of the course and lectures by outside speakers, student participation through committees or panels, and the use of pertinent audio-visual material whenever available.

Outside speakers brought to the group were specialists in various phases of the state educational program. Among them were the Dean of Guidance of Compton College, the Director of the College, the Director of Audio-visual Education for the secondary school district, the Assistant superintendent of the Elementary School District, an elementary school principal, a high school principal, the Assistant Dean of the University of California at Los Angeles School of Education, a district chairman of the California Parent-Teachers Association a representative of the California Teachers Association, and a member of the Board of Directors of the NEA.

Some of the films found most useful with the class were "Tips to Teachers," "Understanding Our Human Material," and "Our Teacher, Mary Dean."

A textbook was used as outside reading, primarily for general background. Only the parts of the book considered to be essential were assigned. The outside reading and the class material were checked by a mid-term and a final examination.

Facts and Observations about

the Course.—Several interesting facts about the class and the reaction of its members to the course came to light as the semester moved along.

In the first place, it was interesting to analyze the personnel of the successive groups who elected to enroll. Some insight into the attitudes, personalities, and purposes of the members of each class was gained from a questionnaire filled out at the first meeting and from an assignment which called upon each student to write not more than one typewritten page on the subject "Why I Want To Be A Teacher." The students were encouraged to be frank in their answers and their discussion. Noteworthy, too, was the fact that the proportion of boys and girls in each group was fairly even. In 1948-49 there were 21 boys and 32 girls; in 1949-50 there were 29 boys and 26 girls. In every group, also, there was an approximately equal division between those interested in elementary teaching and those interested in secondary teaching. A few students had in mind junior college or university positions as their preferred goals.

In the second place, there was evidence that attitudes were developing and that the information being gained was striking home. Shifts of the preferred teaching area occurred as students decided that they would do better on one level or another. Some students decided that teaching was not for them and turned their attention to

other vocations. Others who at the outset had been undecided found that they definitely wanted to accept the challenge and follow through with teaching as their occupational choice.

Third, through student evaluation it was most apparent that the textbook was being used incorrectly and that in our plans for the future some class time would have to be devoted to a discussion of some of the more difficult points treated in the book. Some of the students felt that the textbook was too difficult and that a change was necessary. Evidently the students are not familiar with the majority of textbooks in the field of education. However, so far, the matter of a change of books has been left open.

Fourth, it became increasingly clear as the semester moved along with the proper rapport established between the instructor and the class that there was a great source of valuable information available through a critical student evaluation of the course. This was done, both at the mid-term and at the end of the semester. The replies were kept anonymous to insure frankness on the part of the class. From this evaluation we received help in adding to, discarding or strengthening parts of the course, in the selection of outside speakers for another year, in assessing audio-visual materials and in analyzing the success of the methods used in giving the course.

Fifth, there is one topic which

continually appears and reappears in class discussion and in the final evaluation of the course. This topic is classroom discipline. We have thought about this problem a good deal in connection with the class work and have come to the conclusion that discipline is a serious matter to all prospective and beginning teachers. Several class periods were devoted to thorough delineation of the problems, to discussion of constructive ideas, and to analysis of possible solutions. In the last analysis, each instructor has to handle discipline in his own way. We feel, therefore, that after the student teacher grows into an experienced teacher, he will develop those solutions that meet the situation in his classes.

Student Comments Upon the Course.—We quote below a few of the types of comments most helpful to the instructor in keeping the course alive and indicating some of the items most helpful to the individual students.

"As a general course in education I think Introduction to Education has been very helpful. Certainly it is effective in helping a person decide whether this is the field for him or not."

"I think the testing would be more accurate if it was over the lectures, too."

"Perhaps as a class project a little booklet could be devised with the necessary information concerning the organization of public education. The atmosphere of the class was very good—I think it would be a good incentive to require a notebook to be handed in. Perhaps not to grade but merely to check to see what each student is obtaining from the course."

"To me, personally, the course has been very valuable because it truly did 'introduce me to education'."

"The guest lecturers added greatly to our subject matter and helped us answer many urgent questions. They were a definite asset and necessity."

"I consider myself very fortunate for having been present for all the sessions, because each one showed me something I was totally unaware of."

"The instructor conducted the class in an informal method so that no question went unanswered."

"The course is an excellent experiment in trying to give the teaching major a chance to have an insight into what he will face later in his career so that he may know if that is what he wants."

"The course has shown me the need for continuing my education as long as possible if I desire to remain in a teaching field."

"I believe that this course has been one of the most important courses to me in junior college because it helped me to decide that I would like to be a teacher and it helped me to begin to develop a philosophy of education."

"As additional ingredients to make the course better I would add at least one field trip to a school where observations could be made."

"I have changed my mind—instead of continuing on with physical education, I am dropping out of it and going into some other field."

Conclusion.—As instructors, we feel that on the whole the course has been of real benefit to the students concerned and also in a more general way to the whole teaching profession. Vocational choices should be made early and only with as much current and local information as it is possible to procure. All of the objectives set forth for the course are possible of achievement to varying degrees with junior college students interested in teaching as a career.

General Education and the Teaching Of the Social Sciences

JUDSON REA BUTLER

THE General Education movement has now attained momentum sufficient to indicate that higher education and probably secondary school programs will be profoundly affected by it within the next decades. The impetus toward revision of the liberal arts curriculum is making itself felt in scores of universities, colleges, and junior colleges. Increasingly, college teachers are being called upon to share in the task of integrating related subject-matter fields, of designing and setting in motion courses or programs which cut across departmental lines.

Boston University of General College has now completed the fourth year of its new venture in integrative *general education*. In this program psychology is combined with sociology and anthropology in a two-year course (carrying a total of seventeen semester hours' credit) and is synchronized and integrated with the biological and physical sciences on the one hand, and with the social sciences and the humanities on the other. To quote from the 1948-1949 catalogue: "The aim is to unify our courses of instruction so that they constitute, in effect, one single course, in which the material drawn from all fields is synchronized and correlated at every feasi-

ble point to emphasize significant relationships and to promote meaningful generalizations, consistent knowledgeable attitudes, and critical appreciation. There are no limits to the area in which such helpful relations may be established, and in this program no field or subject is out of bounds."

Admittedly, this is an ambitious project. Other colleges, so far as is known to the writer, have limited themselves to a number of broad courses in the sciences, and/or the social sciences, and the humanities. Each course is independent and unrelated, except casually, to the others. The program at Boston attempts more complete integration of the three. The fact that Boston's particular experimental curriculum represents one of the more radical revisions of the conventional liberal arts pattern of instruction may add to rather than detract from the interest which the program may have for others.

Unity, it is maintained, is an inherent characteristic not only of the world of science but, in a sense, of the social world. The separation of many subjects and their subdivisions has not destroyed the essential interdependence of all science and of most knowledge and understanding. By aligning these

subjects in terms of their more obvious logical relationships, a truer perspective may be established early in the student's career. And this more natural method of presentation neither precludes thoroughness nor necessitates a superficial survey approach. In fact, the result should be to enrich and broaden the student's understanding and appreciation. The trend is toward systems of knowledge, and away from the acquiring of isolated facts and techniques.

The difficulty of thorough revision is complicated by the absence of agreement as to the form and content of the new curriculum. Though there are resemblances among the many programs now functioning, general agreement ends in the formulation of purposes some of which are stated vaguely. Nearly all general education programs, however, recognize the fact that as the complexities of knowledge multiply, and as the intricacies of human interdependence increase, so the power to sift and refine mere facts, and the ability to integrate material drawn from wide areas into meaningful patterns of human significance, must be developed. This wider patterning, it is held, is intimately related to the understanding of pressing individual and social problems.

Inevitably there are honest conservatives who see no fault in the rigid departmentalism of college education, to whom "general education" represents only superficiality and the relaxation of standards.

Thoroughgoing reform is always difficult, but the reward of cooperative effort promises to be proportionate to the difficulties involved.

The experiment at the General College has involved many trials. Naturally enough, both content and methods have been subject to periodic revision as the program has undergone the acid test of synchronization and integration. No amount of planning can foresee all the exigencies of actual course construction and instruction. And adjustment and revision will have to be the order of the day for a long time to come.

THE PROGRAM

Limitations of space preclude more than an outline of the course at Boston University. At the present writing a core program is offered for the freshman and sophomore years.¹ As here conceived, general education is not concerned with knowledge, *per se*. It is concerned, rather, with affording all students, regardless of the later area of specialization, a basic understanding of the sciences, social sciences, and humanities—as tools for dealing logically, informatively, and imaginatively with novel problems as they arise in living. In order to achieve these ends, through the establishment of helpful relationships drawn from a number of areas, it has been necessary to institute a common course

¹An entering student may take the "core curriculum" at the General College before transferring as a junior, or may enter directly in the freshman class in any one of the seven other undergraduate colleges of the University.

of study, or a "core curriculum." This two-year curriculum is designed to engage the students' entire time, and includes material drawn from five broad areas of human interest, taught without reference to the normal lines of demarcation which distinguish the separate disciplines. The five are: Natural Science (biology, geology, physics, chemistry, and astronomy), Human Relations (psychology, sociology, anthropology), Political Economy (government and economics), English and Humanities (communication, literature, music, and art), and Guidance.

The aim is to fuse each of these broad fields and to integrate relevant principles from all fields. The subject matters of physics, chemistry, biology, and geology are thus fused into a single two-year course in science (eighteen semester hours' credit), and science is correlated in turn with the social sciences, and with English and the Humanities. Human Relations carries seventeen hours of credit; Political Economy, nine hours; English and Humanities, eighteen; and Guidance, two hours.²

It is self-evident that such a plan for integrated study could not func-

tion unless all students took the entire program. Certain psychological discussions in Human Relations cannot be based, for example, on the study of genetics given in the Natural Science course, nor could the science teacher rely on the logical extension of his instruction in the area of psychology, if the entire program were not a uniform requirement.

THE FUNCTIONING OF THE PROGRAM

Each of the courses mentioned above would require a volume, no less, for an adequate account of its content and method.³ A few examples of cooperative effort by members of the several divisions, however, may serve to illustrate the manner in which principles in one field of learning are related to knowledge and understanding gained in the other branches.

A typical instance is that afforded by the treatment of the subject of music. The work here starts under the Science department, where the physics and mathematics of sound waves are presented, followed by study of the physiology of the ear and related neural physiology. At this point the Department of Human Relations introduces a consideration of auditory discrimination, auditory perception, and adds the concepts of pitch and time, patterning, conditioning to music, and the like. From the Human Relations division also are brought in concepts from sociology and anthropology relating to the

²The work in guidance constitutes the subject for a paper in itself. It is believed however, that individual and group guidance is an essential function of a general education, and to that end, General College employs six full time trained counselors, or one for every 225 students.

³A brief description of three of the courses is contained in three volumes edited by Earl J. McGrath, *The Humanities in General Education*, *Science in General Education*, *Social Science in General Education*.

social significance of music and to the culture of an era and a people.⁴ Meanwhile, the Humanities division is developing musicology: history, theory, types of music, etc., in close relation with concepts from physics, physiology, psychology, sociology, and anthropology, which should help to fill out a more complete and meaningful configuration. The student may not come out with a love of great music—though a surprising number do acquire a beginning of appreciation—but he does understand something of the subject, of its relation to other fields of knowledge, and of its aesthetic and social significance.

A similar treatment is given to art: the starting point in the physics of light and the physiology of the eye and brain; then the physiology and the sociological and anthropological significance of art are taken up, together with some treatment of theory and of the principal forms. Other examples could be taken from various parts of the course. Topics include: the relation between genetics, heredity, individual differences, psychometrics, endocrinology, drives, motivation, psychosomatic and psychoanalytical concepts as related to the problems of motivation and character analysis in literature; logic, semantics, scientific reasoning, and aberrations of reasoning of normal and abnormal varieties—developed by the appropriate departments and, of course, related throughout.

These are random examples which illustrate the more obvious

devices by which the cooperation of men from various fields may serve to integrate related material. From such wide academic areas, it is believed, meaningful conformations of added interest and significance may be constructed, and a more mature understanding may be promoted.

ADVANTAGES

The method of general coordination of the academic divisions and of the close correlation of material into linked patterns has inherent advantages, many of which are self-evident to the teacher. Several factors are listed, however, which favor the objectives of general education and of efficient study and learning.

1. Students benefit from the elimination of overlapping in material and the gaps in knowledge.
2. Instructors are enabled to select that material which is judged to be strictly necessary for the student to successful life adjustment as a citizen and an individual. Likewise the faculty reduces this essential material to that which the student has the ability to master and understand within the one or two years the course is to run. Optional and flexible assignments offer added opportunities to the more brilliant student.
3. The integrative method, itself, is an aid in culling out material not functionally essential to basic understanding.
4. The student may be given an adequate background of related mater-

⁴An example is that offered by the treatment of Balinese music. Piano adaptations are presented along with discussions which relate this music to occidental music on the one hand, and to Balinese culture on the other. In this, as in several instances, professors from two departments, Human Relations and the Humanities, occupy the same platform.

ial wherever this may be deemed essential.

5. The instructor is saved from unsupervised excursions into fields where his training and experience have not equipped him to speak as an authority. How many psychologists have, perforce, lectured on such subjects as: the physiology of the sense organs, the physics of light, sound, and heat, the chemistry of olfactory stimuli and of the endocrine glands; the principles of genetics; the field of aesthetics; the sociology and anthropology which are germane to social psychology; or the philosophical background and implications of our subject? Some, doubtless, may speak in one or more of these areas as authorities, but many have operated from a sketchy outline where only the politeness or indifference of the students has prevented embarrassment.
6. Motivation is greatly enhanced where meaning and understanding are stressed in constant cross reference.
7. Learning is more efficient in an integrated program. Studies have shown repeatedly that facts, relatively unrelated to any larger pattern, are quickly forgotten after examination time; whereas understanding and appreciation are relatively permanent acquisitions. More specifically, a pattern of meaningfully related material, provides a multitude of associative "hooks" for the recall of the larger picture and/or its component parts.
8. As a corollary, broad concepts and appreciation are favored by this approach. The opportunities afforded for the application of psychological principles, for example, in other academic areas, and from there to problems drawn from life and familiar to the student, not only bolster recall, but promote essential understanding.
9. It might be argued with some justification that this method of instruction should contribute not only to the integration of the student's knowledge and understanding, but also to the synthesis and integra-

tion of his personality. Such a claim, while difficult to prove, is plausible in psychological theory. Members of the faculty have noted many signs which point in that direction: increased social participation, freer participation in class and academic activities, release from emotional tension and inhibition, a greater tolerance and maturity of attitude. It is difficult, though not impossible, to gain more reliable evidence of such personal benefit from integrative education, and efforts are now being made to develop evaluative tools.

Even this short listing may appear as an elaboration of the obvious, especially to the psychologist and the student of education. Perhaps these advantages could be summed up in the expressed hope and belief that this method of integrative study is effective in enriching the curriculum and in broadening the students' knowledge and understanding.

DISADVANTAGES

General education programs, wherever installed, have seldom met with universal, unqualified, and enthusiastic approval by members of the academic faculty. Some of the criticism is constructive; some of it appears with an emotional complexion suggesting that it has been conceived in a mating of conservatism and timidity, and born of the desire to protect academic prerogative. On the other hand, the prevalence of undoubtedly honest criticism from able scholars demands respectful consideration. Objections such as the following put forward by thoughtful men:

1. It is difficult to find teachers who combine the depth and breadth of scholarship, the teaching ability and

will to cooperate, and who are disposed to devote their major efforts to devising and implementing a new program of the type projected.

2. This is a most demanding type of teaching assignment. Only one who loves teaching for its own sake would willingly commit himself to such a chore. Practice has shown that a single broad course must be under the entire domination of one scholar, no matter how many experts may assist him in the course. This puts a heavy burden on the key man.
3. New courses which "... draw their material from wider divisions of knowledge, courses embodying unusual combinations of subject matter not closely related within the systematic, logical development of the subject ..." will not give the essential background in the student's later area of specialization. The objection, however, is not valid in our experience. On the other hand, experience has tended to indicate that a general education background is an asset, rather than a handicap to work in most subsequent majors.
4. General education programs substitute superficiality for rigor of training in a number of major disciplines. This contention has been touched on earlier in this paper.
5. General education puts off the start of specialized and vocational training, thus delaying the utilization of a prime motivating factor.

This is undoubtedly true in certain instances. There may be compensating advantages, however. Studies have shown that nearly half of the college graduates do not work in the field for which they have prepared professionally. This indicates a tremendous loss of man power and a waste of educational facilities. This loss might be offset in part by delaying the student's final selection of a field of specialized study, until he has been exposed to a number of fields, and by affording him the advantage of a systematic professional guidance program.

6. The inflexibility of the program as

constituted at any given time is another possible disadvantage. (An integrative program is a bed in which all instructors must turn at the same time.)

7. The student has no opportunity for selection of courses.
8. General education tends to draw scholars away from research in their specialized fields.

A PRELIMINARY APPRAISAL

By applying the principles of coordination and integration as discussed, certain tentative conclusions have been reached. After more than five years it would seem strange to return to the narrower confines of the traditional curriculum. Some colleagues regard the proponents of the program as starry-eyed radicals, others doubt the practicality of the program, but wish the program luck; while a growing number agree that reform is essential, and that this is one way by which the general education needs of the student may be more nearly approached.

Those in the General College general education program are there because they believed, despite the excellent specialized professional and vocational patterns of instruction available to the student, that his general cultural needs were inadequately met by a loose assortment of professional or semiprofessional courses, which are too narrow, too specialized, and relatively unrelated either to each other or to the problems of living. Emphasis on vocationalism and neglect of or haphazard provision for cul-

⁵*The President's Committee on Higher Education, Higher Education for American Democracy, 1947, p. 57.*

tural training has produced the average uncultured college graduate. This average professional or semieducated individual, in Ortega y Gasset's words "... is the new barbarian, a laggard behind the contemporary civilization, archaic and primitive in contrast with his problems, which are grimly, relentlessly modern [he is] more learned than ever before, but at the same time more uncultured—the engineer, the physician, the lawyer, the scientist."⁶ If this indictment has any validity, then radical reform is indicated. For it is doubtful whether such an "average college graduate" would make a good physician, lawyer, or engineer.

It is conceded that the General College program is only one of a number of possible answers to the problem—granting that there is a problem and a feasible answer. Other institutions are seeking a solution in different types of reorganization, with encouraging results. Several types may probably survive and prosper. The psychologist and teacher trained in educational theory and practice are the academic authorities best equipped to evaluate the relative merits of any such system. But the student himself will render the final verdict, both by his attitude and his

evidence of achievement.

The indications, so far, judged by the reactions of students, are encouraging. The number of applicants for the general education program has steadily increased to the limits of the present capacity to expand. Last year the total enrollment was 1,563, although alternate underclass programs were offered in seven other divisions of the University. The press of numbers, while adding to the problems, has not caused any serious impairment to the program.

No satisfactory standardized tests have been found with which to compare the achievement of General College students with those in other general education programs, or in conventional programs, or which are designed to measure the type of knowledge and understanding emphasized by an integrative course of instruction.⁷ For general purposes of comparison reliance has been placed, so far, on the Graduate Record Examination. For three years sophomores have been given the battery of eight tests which comprises the so-called Test of General Education. In the last two years these sophomores also took one or another of the Advanced Tests on which the liberal arts senior or graduate is normally tested in his special field of concentration. This last is not standardized at the sophomore level.

The results, while inadequate as a criterion of success in the objectives of general education, are

⁶Jose Ortega y Gasset, *Mission of the University*, Princeton University Press (Translated by H. L. Nostrand) pp. 57-58.

⁷General College is at present engaged in a cooperative study, under the aegis of The American Council on Education, designed to provide the tools for evaluation in the attainment of the objectives of general education.

useful as a check against that type of achievement favored by conventional courses. In each instance the "general education index" for the sophomore class showed a mean score of approximately 505, considerably ahead of the sophomore liberal arts mean or median, and against a liberal arts senior norm of 500; and in the Advanced Tests 35 to 40 per cent of these sophomores equaled or exceeded the liberal arts senior norm. The results gave a measure of reassurance, in so far as they indicated that students in General College had not paid in terms of factual knowledge for the emphasis on integration in an unconventional type of instruction.

Approximately 90 per cent of the graduates of General College have gone on to their junior year. The first class numbered five hundred, for example, and of this number four hundred and three continued in another Department of the University, and forty-nine transferred to some twenty-six colleges outside the University. Roughly the same proportion of the second and third graduating classes, is continuing at Boston or elsewhere.

A follow-up of the progress of these graduates is being made as well as checking academic achievement against their records in General College and in comparison with students who have spent their first two years in senior colleges. Many of them have been interviewed after transfer. So far as available records go, they have equaled or

exceeded their General College grade averages in every college to which they have transferred, and, so far as it is possible to check, their averages have not fallen below the grade averages of any given college. Judged by the personal reaction of these transfers, which is based obviously on casual observation, their appreciation and enthusiasm for the program has increased, rather than declined, as the result of their advanced specialized study.

These measures of appraisal are far from convincing or conclusive. Time, more careful and extensive results, and better tools of evaluation are required. Whether, in terms of the objectives, the Boston program is less effective, as good as, or better than other types of general education programs, or whether, even, if is an improvement over the conventional program, must be left to future decision. It is believed that the current program is on the right track, and that refinement and improvement on the basis of experience will result in a more effective general education program.

Any progress that has been made has been a result of cooperative effort on the part of the entire faculty. The departmental chairmen,⁸ in particular, have borne a heavy burden of work and responsibility, and their contribution

⁸Wesley N. Tiffney, Science; Ernest B. Walston, Guidance; G. Norman Eddy, Human Relations; William Verhage, Political Economy; Willis Wager, English and Humanities; Frank H. Patterson, English and Humanities.

to the program has been in proportion. Their training, interests, and talents have varied in a fashion to complement each other, and they have worked together in a spirit of give and take which would have been hard to improve upon—or to duplicate. A faith in the methods of integrative general education, and the will to give it a thorough tryout have been the basis for the common cause.

None of this would have been possible, however, without the confidence and help of President Daniel L. Marsh. His understanding and vision, and his warm encouragement and generous support constituted the indispensable ingredient. With a free hand and consistent administrative backing, there is no excuse, except staff inadequacies, for failure to achieve a thorough test of these theories.

Modifications of the First Two Years of College Chemistry as Suggested by Practicing Chemists¹

BROTHER I. LEO

MODIFICATION of the content of individual courses and revision of curricula are two problems that frequently confront teachers and administrators. In making the proper adjustments, first consideration is usually given to the material that must be included to prepare students for subsequent courses. Not so much stressed, yet worthy of attention, is the adaptation of curricula and course content to the requirements of prospective employees, particularly in such professional subjects as chemistry.

Many men without college degrees are employed in chemical work. In the spring of 1949, thirty-five companies in Tennessee had in their employ 128 men without degrees in chemical work and 205 men with such degrees. In the two calendar years, 1947 and 1948, fifteen companies had hired for chemical work 82 men without degrees and 32 men with degrees. Mr. R. D. Rowe states that "25 percent of junior college chemistry students are known to become technicians."² When one considers that there are over six hundred junior colleges, this source alone of employees contributes a significant number of men without degrees.

The other side of the picture is

that many men who have attained degrees in chemistry do not enter the chemical profession. Before World War II, according to Professor Lee I. Smith of the University of Minnesota, one-third to one-half of the graduates in chemistry did only routine work or were lost to other fields.³ Moreover, he estimated, only about five per cent of the graduating classes were acceptable for the graduate schools. And some chemists have been warned, as they entered upon a job, that they would find only about five per cent of their academic chemistry of usefulness in the plant.

If Professor Smith is correct, the majority of students are being ignored when curricula and courses are revised merely to shape them into preparatory courses for more advanced courses. In many cases, the welfare of students would perhaps be better served if revisions were made with the thought of qualifying prospective chemists for

¹This article completes a report which was published in the *Junior College Journal* in October of last year (Vol. XX, October, 1949).

²R. D. Rowe, "The Junior College," *Journal of Chemical Education*, XXVI (July, 1948), 373.

³Lee I. Smith, "Problems in Postwar Education," *Chemical and Engineering News*, XXIII (February 25, 1945), 338.

succeeding in some future industrial occupation, especially if the student plans to earn a living after completing only two years of college.

The question that naturally arises is: What revisions should be made to render the student's formal training more useful to him?

To obtain suggestions that might help in solving this problem, the chemistry department in Christian Brothers College at Memphis, Tennessee, sent a questionnaire last year to practicing chemists in Memphis. Twenty-eight replies, representing about as many different industrial plants, were received. In the report which follows the information gathered is grouped under two headings: (1) curriculum modifications; (2) changes in the content of courses.

Curriculum Modifications.—As a basis for comment, it was postulated that the first two years of chemistry consisted of the following courses, with the semester hours of credit indicated in parentheses. First year—general chemistry and qualitative analysis (10); mathematics (10); English composition (6); modern language (6). Second year—organic chemistry (4 or 8); quantitative analysis (4 or 0); calculus (8); physics (8); modern language (6).

Of the twenty-eight chemists who filled out this part of the questionnaire, only five were satisfied with the curriculum outlined.

What new material did these chemists suggest should be in-

cluded? The subjects recommended, along with their frequency, were as follows: letters and reports, 18; mechanical drawing, 11; industrial organization and management, 9; social psychology, 8; economics, 7; survey of business, 5; blue-print reading, 5; accounting, 5; bacteriology, 5; literature, 5.

The following subjects were mentioned fewer than five times: biology, engineering materials, typewriting, German, design drafting, politics and government, metallurgy, additional physics, industrial chemistry, history of chemistry, mental arithmetic, descriptive geometry, geology, statistics and control charts, logic and ethics.

The chemists indicated not only the subjects they would like to see added to the curriculum but also those which they thought could be replaced. Thirteen men suggested that modern language be dropped. Seven favored dropping the calculus. Three would decrease the amount of trigonometry and analytics. Some recommended that the freshman chemistry course be cut from ten hours to eight.

Many educators will experience no surprise at the attitude expressed by these practicing chemists toward modern language. The purpose of the conventional foreign language requirement has been, after all, to prepare students for research. Men employed in chemistry with only two years of college as a background scarcely need a knowledge of German or French.

The evaluation given the mathematics courses by practicing chemists was not expected. There are teachers, however, who will agree with the chemists that trigonometry is of professional value only to the extent that its algebraic aspect is mastered. Hence a whole year of algebra—say, the equivalent of six semester hours of credit—might be better than equal amounts of algebra and trigonometry. Several men suggested that courses in statistics and control charts might be more worthwhile than either analytics or the calculus.

Is it feasible for a college to adopt any of these recommendations? Some of them can easily be put into practice, particularly for students who had chemistry in high school. Is there any unsurmountable obstacle to cutting the first semester's course in chemistry from five to three credits? By maintaining five credits for the second semester, students could still earn in one year the eight credits that are generally required. If the first semester's chemistry course is thus curtailed and foreign language dropped, one-sixth of the traditional curriculum could be replaced. As a consequence, a course in the survey of business could be added. This course could treat several of the topics suggested by the chemists: business letters and reports, accounting, industrial organization and management, labor relations, social psychology, orientation to the business man's point

of view, economic geography, statistics and control charts. A non-laboratory course in engineering materials could be added in which students would receive introductory information on glues, woods, alloys, paints, corrosion problems, fuels, and maintenance of equipment. Public speaking could be included in the English course, as it already is in those schools which have adopted the current popular expansion of "English composition" into "communications."

Another possibility for saving time and thus providing for substitutions in the old curriculum is to modify the requirements and content of the engineering drawing courses. The overlapping or repetition in such courses is altogether unnecessary. Many colleges and universities have already made constructive improvements in this direction.

One course not stressed by the chemists, despite the rather considerable agitation for it in recent years, is government and politics. Other courses perhaps worthy of more favor than these chemists expressed are sociology and ethics.

Changes in the Content of Courses.—The questionnaire also invited the practicing chemists to make suggestions for alterations in the content of chemistry courses. They were asked to indicate (A) principles that should receive greater stress; (B) techniques that students should know better; (C) laboratory precautions of which students should be more aware;

and (D) source material and references with which students should be more familiar.

(A) *Principles.*—Under this heading, five suggestions appeared several times:

1. The economic viewpoint of the commercial laboratory should be presented—namely, that industry's objective is a better product at a lower cost.
2. More calculations, particularly stoichiometric and with the use of engineers' units, should be given.
3. Chemical behavior, with equations, should be stressed more than those of memory.
4. The development of the research attitude should receive direct consideration in class-work.

Other recommendations, but expressed less frequently than the preceding ones, pertained to stability of compounds, applications to biology and medicine, statistical analysis of data, and inexactness of much experimental work.

Can any of these recommendations be put into practice? Since so many replies suggested something be done about an appreciation of the cost of experimentation, perhaps teachers should develop some laboratory assignments in which students would be obliged to estimate the cost of experiments in terms of chemicals, equipment and labor. I surmise from the statements in the replies to the questionnaire that beginners in commercial laboratories are careless in the use

of chemicals and unappreciative of the conservative policies of some employers in the matter of research. It is conceivable that small entrepreneurs view some of the attempts at original work as mere piddling around in the laboratory. Since mastery of stoichiometric calculations and equations is required before students become juniors, one wonders why these items received mention at all. Might not this apparent deficiency on the part of beginning chemists be due to the fact that their last courses are physical and organic chemistry, courses in which stoichiometry and equations are not stressed very much? If this explanation is the true one, placement of quantitative analysis in the fourth semester would help eliminate this seeming deficiency. By using illustrations for problems from reactions other than those actually done in the laboratory, not only would students become more adept at calculations but they would also become more experienced with balancing equations and with applications of reasoning processes rather than those of mere memory.

For developing a research attitude, one of the chemists suggested that an appreciation of the imagination and insight required might be a concomitant of illustrations drawn from the history of science. In the laboratory teachers could require students to rectify mistakes instead of repeating experiments. In analysis courses, where a common practice is to start all over if

an error has occurred, many mistakes—such as addition of too much acid or missing an ion in qualitative or over-stepping an end-point or incomplete ignition in quantitative—could be corrected by a little resourcefulness. In organic, too, mistakes—such as overheating a mixture, adding too much solvent—might easily be remedied. Remedial work on reaction mixtures requires resourcefulness, a quality that is definitely related to good technique as well as to research.

(B) *Techniques.*—Under techniques, greater speed in analytical operations and better written reports were mentioned most frequently. Some chemists indicated that attention should be given, even in college classes, to "tailoring one's procedures to actual plant requirements." Students should realize that "no precision is feasible beyond the limits of the equipment used." They should be trained in the maintenance and repair of ordinary apparatus. Cleanliness, neatness, orderliness should all be inculcated. The research attitude should be consciously developed in the laboratory; as one answerer put it, the students need "training in keen observation of everything, especially in departures from the expected."

Additional suggestions had reference to (1) preparation and choice of indicators, (2) use of the slide rule, (3) use of stainless steel and copper equipment, (4) preparation and standardization of so-

lutions, and (5) use of melting-point apparatus.

Some chemists listed the use of specialized instruments, such as the penetrometer, spectrophotometer, viscosimeter, and photoelectric equipment. Surely, practice with all of these instruments is not feasible in the courses given in the first two years of college. If knowledge of their use is vital for placement policy, perhaps the instruments could be borrowed. However, most chemists probably have the same opinion as the one who wrote that "industry's analytical methods are much superior to those in the colleges but I am not too sure that they should be taught in school since they can readily be learned in the plant."

(C) *Precautions.*—The practicing chemists asserted repeatedly that students should be alerted more effectively to hazardous chemicals and reactions—toxic, inflammable, vesicant, explosive, noxious. They should realize that the common acids and bases are hazardous. They should become familiar with the dangers involved in the use of electrical apparatus. They should never make concoctions. One chemist wrote that "they should not be permitted to smoke in laboratories."

The precautions listed most frequently were the use of hoods, goggles, and glass shields. Students should be taught first-aid in case of fire, poisons, accidents. They should be familiar with fire-fighting equipment, such as extinguishers,

sand, blankets. One chemist wrote that instructions should be given in the toxicological principles that apply to common laboratory reagents. Another stated that students should be "considerate of the safety of their fellow workers."

The variety and definiteness of the precautions suggest the need for more attention to them in college classes. How many times have table tops been scarred when the use of an asbestos board as a routine habit would have prevented the scarring! Water has been used futilely and dangerously on fires caused by sodium peroxide. Carelessness in the complete disposal of sodium and phosphorus has caused damage. In spite of such accidents and perhaps more serious ones, how many instructors have organized definite material on "precautions in the chemistry laboratory?" It is time, is it not, to heed the advice of the chemist who wrote that "the safe way of doing things should begin in school"?

(D) *Books and References Most Needed.*—The references that were mentioned most frequently were *Chemical Abstracts* and the *Handbooks* of chemistry, physics, and engineering. Others that were suggested several times were: *Journal of Analytical Chemistry*, *International Critical Tables*, *Standard Methods of Analysis* by Scott, *Quantitative Inorganic Analysis* by Kolthoff and Sandell, methods of analysis by the Association of Official Agricultural Chemists, *Commercial Methods of Analysis* by

Snell and Biffen, *Identification of Organic Compounds* by Shriner and Fuson, *Organic Chemistry* by Fieser and Fieser, *Organic Syntheses* by Gilman, and the *Chemical Formulary*. Some other secondary references, thought to be of value, are *The Industrial Arts Index*, *The Engineering Index*, *The Agricultural Index*, and *Biological Abstracts*.

It is probable that few chemists expect men in the first two years of college to become acquainted with all the references listed above. One man wrote: "It is difficult to expect library research from two-year students." However, as another mentioned, "Knowledge of the sources of relevant information, and ability to use the facts thus obtained is more important than the empirical facts memorized by students." A suggestion practical for colleges in small communities is the following: "Let students learn the sources that are available in all local libraries."

Contrary to expectation, not one of the practicing chemists suggested any of the following: *A Guide to the Literature*, by Crane and Patterson; *Chemical Publications*, by Mellon; and *Library Guide for the Chemist*, by Soule.

One way to translate these suggestions on references into classroom practice would be for teachers to assign library readings and research papers. Instructors could distribute a list of the periodicals and references with which they expect the students to become

familiar. Assignments could be given that require their use. A teacher, as he scans through the journals, might write on 3x5 cards the articles that students could read with profit. Then at the beginning of each semester, he could issue a list of these recommended readings and require a precis of ten or so articles from different journals. The students would thus acquire some familiarity with library work, a phase of training which is unheard of in many undergraduate chemistry courses.

(E) *"Other Suggestions."*—In the space provided in the questionnaire for "any other suggestions you may care to make," most of the remarks pertained either to personality traits or to effective use of language. The traits mentioned most frequently were intellectual honesty, orderly as well as accurate work, ability to sell one's self, appreciation of the sources of jobs and profits, and a desire to read and learn after leaving school. The emphasis upon the use of good English can be judged best from direct quotation of statements made in the answers to the questionnaire. The following are typical:

"There is no point to an investigation if the researcher is unable to give a report lucidly and simply."

"The lack of ability to express themselves clearly in well-written reports is a failing of most college students."

"The use of good English and ability to spell. Every man should learn that his ability to sell himself and his skills depends considerably on his ability to express himself clearly and forcefully in speech and in writing."

"How to write and speak the businessman's language. He will not speak yours."

SUMMARY

On the basis of the preceding suggestions, the following modifications of the chemistry curriculum for men who expect to be employed before obtaining a degree in chemistry are called for: replace modern language, two of the five semester credits in general chemistry, and some of the repetitions in drawing courses, substituting for them courses in speech, engineering materials, and survey of business. Although the courses in mathematics should probably remain the same, it should place greater emphasis upon the algebraic phase of trigonometry than upon the mere numerical solution of triangles.

According to the practicing chemists, the chief alterations in the content of chemistry courses would be that more calculations should be given in organic chemistry and more equations in quantitative analysis, and that engineers' units should be used more extensively in problems than has been customary. Some of the recommendations of chemists might be realized by modifying the approach to laboratory work. Students could make an estimate of the cost of preparations. They could pursue a difficulty instead of "beginning all over." They could use a variety of forms for their reports of experimental results. They could be trained to the neces-

sity of following precautions and familiarizing themselves with hazards.

The opinion of these twenty-eight practicing chemists is that

students should definitely be given reading assignments in the periodical literature and exercises in the use of handbooks and other references.

Educational Adjustment To What?

W. F. RABE

WANDERING in and out of the maze of educational objectives which professional educators talk and write about, one particular objective appears so frequently as to indicate almost unanimous endorsement. This objective is the one symbolized in the words "education for life adjustment," or, in more specific phrase, "student adjustment to self, society, job, and family."

This objective has won support, and rightly so. The efforts of colleges to achieve it have unquestionably contributed greatly to the well-being and success of students. Nevertheless, as justifiable as such an objective is and as beneficial as it has proved in various educational institutions, it is not altogether satisfactory, for it is an incomplete statement. It represents progress in the right direction, but it is a partial utterance, a symbol for a concept of education which educators have not thought through to its final conclusion.

Just what is the matter with this goal? In and of itself the ideal of life adjustment sounds fine. Patrons of colleges and universities think it excellent. Faculty members subscribe to it without dissent. Students respond to it with a vitality born of the realization that under its aegis attempts are being made to meet their needs. In the

face of such success, to quarrel with "education for life adjustment" as an objective of education may well seem unwise. But the fact remains that a corollary question is implicit in the statement, and too often is left unanswered—namely: To *what* are we going to adjust the student?

In explanations of this objective four areas of adjustment are commonly listed. In fact, they are included in the more specific of the two phrases quoted above—"student adjustment to self, society, job, and family." The first of the four areas is *adjustment to self*. One aim of school experiences is to help the student understand himself as a human being, to help him evaluate and make adequate use of his potentialities. The second area is the student's *adjustment to a job and a career*. Since desire for preparation that will lead to vocational success seems to be the real reason why most students come to college, little needs to be said on this point. A third area of adjustment appears when we consider the *student as citizen-to-be in a community*, as a potential functioning member of society in his immediate locality, nation, and world. The fourth area arises from the creation of the family and *the student's rôle as a parent and homemaker*, a rôle which calls for preparation and adjustment.

Frankly, there is something missing in this analysis of the aim of education. Each of these four areas of adjustment, which education is to facilitate, is an understatement of the rôle of colleges and universities. In each of these areas we fail to name explicitly or to consider in its fullest implications that to which the student is to be adjusted. Is he to be adjusted to himself as he is, or as he might become? To his business or career as it is, or as it might develop? To society as it is, or as it could develop? To his family as it is, or as it can be molded? Life adjustment is an incompletely stated educational goal until we define that to which we are going to adjust the student.

In the first area, adjustment to self, two problems arise. One revolves around a definition of the kind of self to which the student is to make his adjustment. The second centers around the changing nature of that self. The truth is that the student cannot be adjusted to the person he is at any one moment in time without great limitations being placed upon him. He is a changing being, developing under a constantly shifting series of experiences. Consequently, it is essential for him to have an ideal about human nature as it is capable of becoming. We want the student to grow into the fullest realization of that ideal. We will not be satisfied if he is merely adjusted to himself as he is here and now. We cannot afford to permit him to accept himself as he exists at any

moment. The student must realize that he is capable of change and will change. And he must have a goal toward which he consciously directs that process of change. It follows, then, that we must bring the student into contact with the great ideas concerning human nature which lie at the base of our Western Culture. In the light of these ideals he should make his adjustment.

The second area of adjustment is just as inadequately considered. A job and a career mean that the student is going to be a functioning unit in the economic structure of contemporary America. Is his "adjustment" to be passive acceptance of all of the problems created by modern technological production? Is the student to accept the inequality of income distribution? Is he to accept and adjust to the antagonism and bitterness of labor-management relations? Or is he to apply his weight toward correction of evils and the introduction into economic life of some semblance of what men have considered a fair and decent set of practices? Is not the student so to act himself that he will help business and economic activity assume characteristics which more nearly approach the higher aspirations of men in the past, such as greater equality of opportunity, more adequate conservation of human and natural resources, less ruthless practices in business dealings? To what are we to adjust the student? To business as it operates, or to business as it

could function in terms of the considered values and judgments of men over a long period of economic thought and philosophy?

The third area can be subjected to similar questions. Is the student as a citizen in his community to accept governmental and political practices as they exist? In his church, in his service club, as a patron of schools, as a voter, is his rôle to be passive acceptance of all that is done? Or is he to act on the basis of a series of well-ingrained concepts of how society could and should operate? Should he not conduct himself in such a manner that his efforts contribute to building a society more in line with the common aspirations of men of all ages—more in line with the kind of life men have always envisioned despite the limitations of the period in which they lived?

The same reasoning can be applied to family adjustment. Is the student to conduct himself as a parent and a homemaker according to the limited pattern of his times, or in accord with the ideal which men have always held in their hearts and minds concerning the kind of home which permits the fullest and richest human existence?

Adjustment to life as it is here and now is the most inadequately stated of educational objectives. True, educators must be realists enough to stimulate students to appraisal of themselves as they exist and of their environment as it

exists. But students adjusted solely to here and now are limited in their progress. We are going to have to introduce the student to ideas men have long cherished as to what the human being might really become, to what economic processes might offer, to what politics and social order might maintain for the benefit of human existence, and to what family relationships might be in their finest moments. Idealistic as this may sound, adjustment of an adequate sort involves the exposure of the student to something challenging and worthy of adjustment. It means adjustment to the ideals, the hopes, the dreams, and the ultimate values which human minds for centuries have seen as worthy of aspiration despite the grubby dishonesty and tragic evidences of life in any age. Oddly enough, there is substantial agreement as to these ultimate values, regardless of the method of thinking, inductive or deductive, supernatural or scientific, with which they are supported.

Education for life adjustment must be adjustment to the highest hopes and values which men have evolved, and not merely to the immediate world as the student will sense it through his rather inadequate receptors. There is more for the student to do than merely to adjust to the world as his eyes and ears apprehend it. He can adjust to his own aspirations, which are the same that men before him have cherished and are those which men always will strive to achieve.

There is little need to state what must be introduced into a college student's curriculum to facilitate the achievement of a goal of adjustment to life as it could be. The broadened concept here suggested does not necessarily imply the addition of new courses of study, for such goals and such adjustment can be facilitated within the structure and content of existing courses. Problems of curriculum have been discussed endlessly and often by educators and do not lie within the purposes of the present essay.

We have attempted to point out the inadequacy of limiting education to adjustment to here and now. Adequate life adjustment must not be toward contemporary needs

alone. It must be adjustment to the larger, timeless needs which men have so hopefully written down in dark dim rooms when hope of a better human existence flickered through tragic despair. What are the students to adjust themselves to in a process of education? To life as it is? Or should their lives be a constant search and struggle to achieve a form of existence beyond the limits of a particular age? Dodge here and there as you wish among educational objectives, the objective of life adjustment will bump into you often and hard. It will not let you alone. But just what does it mean? To what, in the final analysis, are we to adjust the college student?

A Junior College Reading Program

Report of a Three-year Experiment at Worcester Junior College

MIRIAM SCHLEICH

IN the spring of 1946 the need for a reading program at Worcester Junior College was brought forcefully to the attention of the dean and the registrar through a depressingly long monthly failure list. Discussion of the reasons for the failures with both faculty and students brought out the fact that many of the students were not equipped to do the minimum required reading in their courses. A review of the results of the American Council on Education Cooperative Reading Test, taken during Orientation Week in the fall, corroborated this finding. It was therefore agreed that a reading course of some kind would be initiated the following year.

The problem of who would teach the reading course was solved by the process of elimination. Only one member of the staff—the writer—had had any specific training in the teaching of reading, and for this reason she was selected to teach the course. Selecting the content of the course was a little more difficult. The conviction was that the course plan ought to take into consideration the multiple causes of disability: a limited learning capacity, emotional disturbances and wrong attitudes, poor application, limited vocabulary and faulty methods of word attack, physical ailments, overemphasis

on details and memorized answers, subvocalization, word-by-word reading, to mention a few of the major causes. The answer to what reading should be taught depended also on which students should be taught and how they should be selected.

Since the A.C.E. Cooperative English Test is given at Worcester Junior College in the regular testing battery during Freshman Orientation Week, scores made on the reading section of that test were made the basis of selection of personnel for the special reading classes. Students whose percentile in the Cooperative Reading Test, Form S, was 25 or under were automatically placed in one of the three sections of the reading class. In addition, other students could be referred to the class by any one of their instructors during the semester. At registration time students were informed what section they were to enroll in, an effort being made to group engineers, business administration, and liberal arts students separately. It had been hoped that special emphasis in remedial materials could be made according to the major field of the students' interest. However, that hope was doomed to failure because of the unforeseen late enrollment of returning veterans. Those who registered late had to be assigned

to whatever section would fit in with their schedules. Furthermore, the increased enrollment made individualizing instruction impractical and made it necessary to exclude from the classes all except the most severely handicapped readers. As a consequence, concentration upon basic skills for the first semester seemed the wisest program.

The first class meeting was spent entirely in discussion of the nature of the reading process and of the importance of good reading to success in college and in life. The students were shown how the reading course could help them increase their reading ability and were assured that they could expect an appreciable gain in one semester if they made an honest effort to improve. First, it was pointed out that reading is both a skill, or, as the *47th Yearbook of the National Society for the Study of Education* puts it, has skill aspects,¹ and an art. As a skill, it has one thing in common with all skills. We learn it through practice. Just as we learn to swim expertly by swimming and not by merely listening to someone tell us how to swim, so we learn to read by reading. Dr. Ruth Strang in her introduction to *Study Practice Exercises* advises students to "Read . . . Read some more. Read anything. Read about everything. Read enjoyable things

. . . Read, and talk about it. Read very carefully some things. Read on the run most things. Don't think about reading, but just read."

Next, students were shown that as a skill reading involves certain physical requirements—visual acuity, accurate perception, efficient eye movements, an adequate recognition span, a modicum of fixations, few regressions—as well as an adequate vocabulary and effective methods of attacking new words.

It was straightway emphasized, however, that reading is by no means just a mechanical skill. "Reading is thinking," to quote Dr. Stella Center. Though reading is knowing "how" to do something, as are swimming and sewing, it is also a process of comprehending and interpreting meaning. It includes, as Dr. Mortimer Adler observes in his *How to Read a Book*, "all the same skills that are involved in the art of discovery: keenness of observation, readily available memory, range of imagination, and, of course, a reason trained in analysis and reflection." The fact that reason, analysis, and memory play a major part in good reading comprehension makes it essential to put the major emphasis in a reading program upon understanding and interpreting the printed page. In accord with this principle, the machine equipment used in the Worcester Junior College reading course is always used as a means to an end and never as an end in itself.

¹Ruth Strang, "Providing Special Help to Retarded Readers," *Reading in the High School and College*, Forty-seventh Yearbook of the National Society for the Study of Education (Chicago: University of Chicago Press, 1948), Part II, p. 242.

At the second meeting of the class the Iowa Silent Reading Test, Advanced Form, Revised AM, was given to all members, since it was felt that to enroll students for a remedial reading class on the basis of one test only was unwise. The few students whose test percentiles were as high as 34 (lowest college level) or higher were told that the class would be optional for them. For the others it was required. Subsequent class meetings during the first semester were devoted to individual interviews, speeded reading drills, vocabulary and word-building study, development of specific basic reading skills, comprehension exercises, and to analysis of effective study techniques and habits.

During the individual interviews the Iowa Silent Reading Test profile was interpreted to the students to enable them to get some grasp of their own reading difficulties. At the same time the instructor was able to learn from each student something of his reading background and history, the extent and type of his habitual reading, and whether or not reading had been a problem to him in grade and high schools. During individual interviews and also in informal conversations with individual students before and after class sessions it was often possible to discover wrong attitudes and emotional blocks and to help the student toward overcoming such psychological handicaps by relating his problems to his reading

difficulties and general study habits. Severe reading disabilities are often symptoms of deeper difficulties, but by attacking the surface problem, it is sometimes possible to make some headway toward alleviating the basic trouble.

The speeded reading drills, for which Dr. Strang's Study-Type Exercises was used, played a dual role. First, they offered materials so easy in vocabulary and structure and so clear in typography that students were immediately encouraged to "stretch" beyond their habitually slow, word-for-word reading. Secondly, each article covered some phase of the reading process, so that students learned about the psychological and physical processes of reading at the same time that they were increasing their rate of reading.

The vocabulary work included isolated word drill, using Norwood's college-level vocabulary workbook *Concerning Words*, and was also made an integral part of the comprehension exercises. First, words were broken down into their component parts — affixes and roots. Later, when the major prefixes and suffixes had been mastered, the students were asked to build families of words, using key roots and adding all the affixes they could think of. For example, from the root word *integer*, the following family of words would be built: *integrate*, *disintegrate*, *reintegrate*, *unintegrated*, *integration*, *disintegration*, *reintegration*, *integral*, *integrally*, etc. In addition,

groups of words derived from important roots were used to fill in blanks in sentence exercises. This method required the student to make use of context clues in deciding what words would best fill the blanks. The etymology of words was taught, too, where it helped clarify the meaning of a word or lent color that would help to fix the word in the student's mind.² It was pointed out, for example, that the word *pugnacious* is derived from the Latin verb *pugnare*, meaning *to fight*, which in turn is derived from the noun *pugnus*, meaning *fist*. From fists we get fights and from fighting a disposition to be *pugnacious*. Some student would inevitably come up with the discovery that the word *pugilist*, or more probably *pug*, must be derived from the same root. Such a discovery gives a sense of achievement which quickens the memory.

Before comprehension exercises were started, vocabulary snags were anticipated—insofar as is possible with a heterogeneous group of students—and treated in the manners suggested above.

First among the basic reading skills covered was the ability to vary rate of reading according to (a) the kind of material to be read and (b) the purpose for which it is read. The poor reader tends either to skim through everything, never dipping below the surface, or to plod through everything word

by word, giving as much attention to *a's* and *the's* as to subjects and verbs. Students were taught that the words-per-minute rate of a good reader is not an arbitrary number, but that it varies according to content, the reader's purpose, and the reader's background. Three general rates were suggested: skimming, careful reading, and intensive reading.

Skimming itself, it was pointed out, varies according to purpose. Students were given practice both in the swift scanning of the page for specific information, such as a name or date—especially in use of an index or table of contents—and in the rapid reading of topic sentences to gain a sense of the structure or skeleton of main ideas of any given selection. The College Edition of the *Readers Digest* frequently includes a skimming drill. Others were prepared by the instructor.

The technique of careful reading was taught as especially useful for the "second reading" of any course assignments. The "second reading," it was shown, was of maximum effectiveness only after the material had been skimmed through for main ideas and concepts. Intensive reading was reserved for materials which were "dense" with new ideas and concepts, or which had a high proportion of unfamiliar words. Mathematical and scientific problems, directions, and the like would fall in the class of materials needing intensive reading.

²See Johnson O'Connor, *English Vocabulary Builder*.

The next of the basic reading skills to be covered were the various skills needed for the efficient use of textbooks. These involved use of table of contents, index, glossary, and sub-chapter and marginal headings. Students were also given practice in picking out key words, in identifying important ideas through such author signals as A, B, C, 1, 2, 3, italics, and bold type. In addition, wherever summaries or questions followed a chapter, it was suggested that the students read them first, to obtain a mind-slant or an idea of what the author considered important and wished to have remembered.

Included as a basic reading skill was the power of concentrating and remembering. In this connection an analysis of factors affecting good concentration and memory was made with the students, and suggestions for disciplining and facilitating these powers were then formulated. The analysis covered the student's physical condition and its bearing on concentration; external distractions and their elimination; the physical set-up of the study room—including ventilation; temperature, lighting, study position, etc.—and how it affects concentration and memory; and internal distractions, such as day-dreaming and worrying, and suggestions for curtailing them. Better memory was encouraged by having students skim material before giving it a careful reading, by helping them relate materials read to what they already knew, by

giving specific drills on summarizing and outlining, and by insisting upon self-questioning on materials just read.

The comprehension exercises given in the reading course included *précis* work, summaries of main ideas and important details, and analyses of slanting or bias, of implications, and of conclusions that might be drawn on the basis of the authors' theses.

Student reaction to these first reading classes ranged from thinly veiled hostility at the outset, mainly due to the stigma they felt was attached to them by their membership in a remedial class, to enthusiastic appreciation. The students' two main complaints concerned the late afternoon scheduling of the class meetings and the overload of class attendance and study which the extra remedial reading class imposed. Their complaint on the latter score was legitimate. It was unfortunate to have to add an extra class to the schedules of students whose serious reading handicap already made necessary many extra hours of study on their regular required courses. After the first semester, therefore, the assignment of outside work in the reading class was almost entirely abandoned.

On the positive side of the picture, a student questionnaire to which no names were signed showed, at the end of the first semester's work, that 53 per cent of the students who were assigned to the course felt that it was "of great

value" or of "substantial value" to them. Forty-two per cent felt that it was of some value, and only five per cent indicated that it had been of no help. Asked to comment on the content of the course, the majority stated that they particularly liked the vocabulary-building drill and the comprehension work.

At the end of the first semester a second form of the Iowa Silent Test (Form BM) was administered. The gains ranged from nine months to five years in grade level, the mean gain being two years.³ Gains in speed ranged from 75 to 250 words per minute with no loss in comprehension. The average gain was well over 100 words per minute.

At the beginning of the year three quarters of the students required to take the special reading class were reading below the tenth-grade level, as measured by the Iowa Silent Reading Test. At the end of the semester's work only two students—both foreign students—were still reading below the tenth-grade level. One third of them were reading on a college level at the end of the semester.

At the end of the first semester, all students who were reading on the twelfth or thirteenth year level were excused from further remedial work. The rest continued for

a second semester, during which time additional vocabulary and paragraph comprehension study were stressed. During the second semester, also, experimental work was done with a Keystone Tachistoscope.⁴ Students who were perceptible "word readers" found that they could train themselves to recognize phrases and short sentences flashed on the screen at the rate of 1/25 to 1/100th of a second, thus precluding the possibility of word-by-word recognition.

Subsequent work with the tachistoscope started with the Renshaw digits rather than with words and phrases, since students leaned so heavily on the general configuration of words and on memory that slides could be used effectively only once or twice. Digits, on the other hand, (starting with 2 and gradually increasing the span to 5 or 6) were considerably more difficult to memorize or to guess at and consequently provided better material for initial drill to increase both unitary seeing and recognition span.

The procedure followed was to start with plates of two digits at a speed of 1/10 to 1/25 of a second and gradually to increase the number of digits while decreasing the exposure time. After each exposure the students were given time to write down what they had seen. Immediate verification followed each response. Students then checked their own responses as the number or word or phrase was re-flashed on the screen. The drills

³The average gain at the end of the first semester of 1948-49 was 2 years and 3 months, or 17.5 percentile. The average gain at the end of the first semester of 1949-50 was 2 years and 4 months, or 17 percentile.

⁴The Keystone Tachistoscope is an overhead projector with a camera shutter which is used as a flashmeter.

usually covered about 36 responses and took from 10 to 15 minutes of class time. Students enjoyed these drills and showed keen interest in bettering their scores from week to week.

The reading program during the second year was much the same as the first year's program. Classes, however, were moved up to the morning or early afternoon. By the second year, enough students had taken the course with satisfactory results and had talked about it with incoming freshmen so that there was no longer any marked stigma to being a member of an "English Lab" class, as it was euphemistically called. In fact, students not assigned to the class began to inquire if they might join it anyway. One small group of students who could not fit into any of the scheduled sections signed a petition requesting a special class during their lunch hour. This new section, made up entirely of volunteer students, among whom there were a few sophomores, was by far the most stimulating class to work with. This may have been due not only to their interest, but to their superior learning capacity. (The American Council on Education Psychological Test percentiles of the assigned students ranged from 3 to 33, with the majority falling under the 20th percentile.) Two students in that class came up at the end of the year to express their appreciation for the course, remarking that it was the most valuable course they had yet taken.

In this second year of the program at Worcester the new Harvard Reading Films, together with the accompanying *Selections for Improving Speed of Comprehension* by William G. Perry, Jr. and Charles P. Whitlock, were introduced in the second semester.

The Harvard Films are primarily concerned with improving the mechanics of reading, that is, with developing good patterns of eye movements. To this end they simulate to a remarkable degree the actual reading process on an average page of printed material, beginning with a slow, choppy reading in which there are five phrases per line and an overlap⁵ of 75 percent of each line. Gradually the speed is increased from 180 words per minute to 470 words per minute. (This increase is "built" into the film. The 470 words per minute is the "silent" speed on a projector built for silent or sound film and is reached in Film XVI. By switching the button on the projector from "silent" to "sound" the film will run from speeds of 270 words per minute in Film I to 700 words per minute in Film XVI.) The number of phrases per line is decreased from five to two, and the overlap is decreased from 75 per cent to 15 per cent. This decrease in overlap forces the student to see the material at one glance and thus enables him to cover more material in a given time.

Among the physical contribu-

⁵Overlap is that part of the line which appears readably twice in the film.

tions the films make to the student's reading are these: (a) They control all the mechanics so that the student is free to concentrate completely on the content. (b) They help him to increase his span of recognition gradually but systematically. (c) They prevent him—and this is especially valuable for the chronic "regressivist"—from going back over a line or phrase two or three times and force him to get the meaning at one reading.

The psychological contribution of the films is likewise valuable in helping the retarded reader to increase his rate of comprehension. In the first place, they give him renewed confidence in his ability to improve his reading, because they seem to be objectively doing something about a general handicap which he and numerous others share through no fault of their own. In addition, they supply a constant, systematic spur to self-improvement. When used in conjunction with other methods and materials, the Harvard Films can and do serve a useful end.

A retrospective appraisal of the second year's program brought to focus again the overload the reading course put on poorer students. This overload resulted in an excessive cutting by some students, usually those who needed the help most but who also needed every minute they could get for studying their credit courses. Penalties for over-cutting were initiated but were never rigidly enforced. In spite of this handicap, the final ap-

praisal of the second year showed an average gain of 2 years and 3 months in grade level, or 17.5 percentile, as measured by the Iowa Silent Reading Tests.

At the end of the first semester of the second year, a tentative experiment was made to see if there were any indication of a relation between increased reading efficiency and learning capacity. A group of fourteen of the reading students was retested with the American Council on Education Psychological Examination. They were given the same edition they had taken seven months earlier. The results were a mean gain of 80 per cent on the linguistic section of the test. Further studies in this area will be made next year.

The results of the first two years of experimentation with a reading program at Worcester Junior College convinced the administration that it was valuable enough to include in the regular scholastic program. This year, accordingly, the reading course is being offered twice a week in a five-hour (per semester) English course for students whose test results showed their need of it. In addition to the standardized reading tests, this year each student was also given visual survey tests, using the Keystone Telebinocular. These screening tests are used to get a picture of the students' visual efficiency. If the tests show doubtful areas of visual efficiency, the student is retested at different times of the day. Profiles are made using different

colored pencils, and on the basis of three profiles, the student may be referred to an optometrist or an oculist.

Semester-hour load of students taking the reading class was somewhat reduced this year, so that there was less overload. The first semester's work was similar to the program developed during the first two years. The second semester's work, which included the Harvard Films and *Selections for Improving Speed of Comprehension*, added some new experiments with oral

reading, recordings, and analyses of the recordings. Recordings of students' oral reading—sight and prepared—show phrasing, methods of attacking unknown words, regressions, omissions, additions, and the like, and give both student and instructor a better understanding of individual reading problems.

All in all, the reading program at Worcester Junior College has made a substantial beginning toward helping entering Freshmen students to overcome serious reading disabilities.

From The Executive Secretary's Desk

JESSE P. BOGUE

The research office of the Association and the Board of Directors feel that the work in seminars and work shop is one of the most valuable phases in the professional activities of junior college staff members. The research office plans an evaluative study to test the validity of this assumption and to discover strong and weak features of these activities. It may be valuable to examine in detail the operation of our seminar.

The Harvard Seminar. For obvious reasons, we are taking the seminar at Harvard University. We know more about it than any other and the needed information is on the Desk. First, all students in the seminar were in the Graduate School, more than half holding either the first or second graduate degree, while others were working towards them. The first objective, therefore, was to assist these students to explore and identify special fields for further investigation. It may be of interest to turn back to the work of last year's seminar at Harvard, conducted by this writer, to see how this objective has worked out. One student discovered the line of her interest at that time and pursued it at Boston University during the year. She has completed her thesis on "Business Education in the Junior College" and received her Master's degree this summer.

Another student became interested in a national follow-up study of junior colleges with respect to the basic functions announced by the movement. His problem has been identified and approved for the doctoral dissertation at Harvard. Studies have been made but they have been "spotty" in character as evidenced by a Master's thesis written by Wendell French of San Diego Junior College. This study was made at the University of Colorado and showed that about forty-five studies had been made at universities. Lines of inquiry dealt almost exclusively with the problems and accomplishments of transfer students. The transfer function is only one of the aims of junior colleges. It seems appropriate to make a national inquiry to find out how well the institutions have achieved not only in the transfer but also in other stated functions. A third student is now working for his doctorate at Harvard on an analysis of costs in various types of junior colleges. He will attempt to discover not merely what it does cost to perform the various functions of a junior college, but what *it ought to cost*.

The seminar this year has again been exploratory. It has helped more than half the students to focus their attention on the particular problems which they wish to study. The limited time of six weeks is

too short in which to do adequate research. However, students have moved up to the frontiers of research and discovered the general direction they wish to take for further study. In itself, this accomplishment by the students is of distinct value.

The Seminar Personnel. There were 23 members of the seminar this year, coming from ten states and representing senior colleges, junior colleges, high schools, a teacher's college, a theological seminary and an industrial engineering concern. The spread of representation was from California to Main. This variety of background, experience, interest and geography enriched the discussions by reason of its differences and uniformities. Often, discussions were enlivened by various points of view and from experiences of the members in different sections of the country as well as from observations they had made in different types of educational institutions. For instance, a teacher with an industrial background contended that junior colleges were entirely overrated; that if the school system through the twelfth year were greatly improved, many of the arguments for the junior college would go out the window; that the junior colleges were merely pouring more of the same kind of thin soup into the educational pot during two additional years! Some heated discussions ensued on this point, you may be sure. This teacher also contended that free education

should end with high school graduation; that senior colleges should be far tougher than they are; that education should be almost exclusively for the professions; that some scholarships should be provided for an occasional student; that perhaps a few junior colleges might be established which should confine themselves exclusively to terminal and adult education.

The Seminar's Methods. What may be described as a core program was generally agreed to by the group. An outline for sub-headings was made and readings were indicated for this purpose. Four books were used for the core of the seminar: *The Community College* by this writer, *The New American College* by Sexson and Harberson, *Terminal Education in the Junior College* by Phebe Ward, *The Aims of Education* by A. N. Whitehead. Students then departed from this core in the direction of specific interest. Each student wrote a critique on the junior college movement as a whole with special reference to his or her particular project. For example, public relations in community colleges, student personnel work in junior colleges, how the extension of the present high school program in Howard County, Maryland, can achieve the purposes of the community college for Negro students and adults, music as an integral part of humanities for all students in a community college, etc., were among the projects selected and written about by the members of

the seminar. Each paper required an annotated bibliography of the student's readings. This was one of the most encouraging features of the work because the amount of reading was almost amazing for the limited time of the session. Harvard libraries are rich in materials of all kinds for collateral readings.

Dr. Lawrence L. Jarvie, Executive Dean, State University of New York, discussed how the master-plan for community colleges, technical institutes and institutes of applied arts and sciences is being implemented. This gave the seminar the advantage of knowledge on how a great state is attacking the problem and why it is doing so. Dr. Lawrence L. Bethel, Director, New Haven YMCA Junior College, New Haven, Connecticut, spent two days with the seminar on the essential problems of work-study programs. Dr. Fletcher Watson of the Graduate School of Education, Harvard, enlightened the seminar with an exposition of general educational studies at the University with special reference to the methods of teaching science in general education. Field trips were made to Lincoln Technical Institute of Northeastern University and to Bradford Junior College because they represent two distinct types of two-year colleges. Dr. Frank Patterson, head of the Department of Communications and Humanities, General College, Boston University, and a member of last year's seminar, visited the class and gave

an analysis of the program of "total integration" in general education at the General College.

In addition to the in-seminar visitors and field trips, members had the unusual advantage of attending work conferences in teaching science in general education where they heard from some of the leading scientists and philosophers of the world. Another series of work-conferences was held on the foreign policies of the United States, again with outstanding authorities from home and abroad on the program. One of the most delightful evenings was a presentation of folk dancing, representative of more than a dozen nations.

Audio-visual aids were used to a limited extent. One interesting sound picture was used from Mount San Antonio Junior College, California. This picture shows what a community college is; how it is organized and how it works. Much more audio-visual material should be produced for junior colleges and for the general public. A definite weakness of the seminar was in the lack of such materials.

Some Highlights of the Seminar. The topic of greatest interest to the seminar as a whole was general education. Nearly every road seemingly ended up with this subject. Some of the sentiment of the group was expressed by two men who were graduates of engineering schools and the graduate of a theological seminary. They felt that they had been betrayed by the nar-

rowness of technical education; that further extension of mere vocational-technical training in junior and senior colleges without a proper fusion of general education was nothing less than a menace to civilization. Let's be practical. "G. I's in Korea Handicapped by Unawareness of Mission"—headline on the front page of the *New York Times*, Sunday, August 13. To quote, "A commander of infantry said: 'I can tell my men what to do. I can show them how to do it. But until they understand why they are doing it, they can't do it well.'" "Their's not to reason why," is not characteristic of fighting or of working men in a democracy. "I'll fight for my country," said a G. I. to the *Times'* special correspondent, Richard J. H. Johnston, "but damned if I see why I am fighting to save this hell hole." Charles Malik, Minister of Lebanon to the United States, expressed the same idea in his address at Harvard this summer regarding the so-called Point Four: "If the United States extends merely its technical know-how to the lesser developed countries of the world and does not at the same time share with us the richness of its total cultural heritage, it will be one of the most cruel things which a great nation has ever done." What the G. I. in Korea said and what Mr. Malik said in another circumstance reflect the deepest convictions of the Harvard Seminar in Junior College Education.

The seminar met at breakfast on the next to the last morning and spent three and a half hours in attempting to summarize some of the basic findings of the group. Informality with the non-directive method characterized the procedure of the seminar. Under the stimulus of personal responsibility, readings, thinking, active participation in discussions and final reports were most encouraging. Expressions of willingness and determination "to go and do something about it" came voluntarily from a great majority of the group. It was a rewarding experience to direct the seminar.

We have heard expressions in some sections of the country in recent months regarding surmises that some junior colleges in those sections "have gone stale." In one state, the highest ranking officers in the department of education said: "What has happened to the junior colleges of this state? Before and during the 20's, seven were founded, during the 30's, there were two, but during the ten years in the 40's only one! It is a fact that we need as many more junior colleges in this state as we have now. What has happened to the movement? Has it gone stale?" The seminars in several parts of the country are designed to help us think seriously about what should be done to promote the growth of the movement, to improve its professional efficiency, and to keep from going stale or falling into educational ruts.

The Junior College World

JESSE P. BOGUE

THE Summer Meeting. When the Blueprint for the Future was drafted in 1945, submitted to and ratified by the convention of 1946, it made provision for a summer meeting of the Board of Directors, the Committee on Coordination and the members of the five Research and Service Committees. The test of time has shown that this plan has been of great value to the Association. Among other things, it has given extra time to review the work of the Association and project reasonable plans for each future year. Finances have been carefully scrutinized and kept on a balanced basis. Lines of investigation have been chartered and results of research evaluated as far as could be done within a short space of time. For instance, the summer meeting this year at the University of Chicago, July 27 to 29, had under consideration seventeen items on the agenda, and it is the purpose of the writer to make a report to the Association on what was done.

Unfortunately, the finances of the Association have not been sufficient to carry out the full program set forth in 1945. At first, it was thought that by reducing the number of members of each committee from five to four that all members could be brought to the summer sessions. Traveling ex-

penses have advanced since 1945 as have other expenses. At the Roanoke convention, therefore, it became necessary to provide for a meeting in 1950 with the Board of Directors and the Committee on Coordination. This being the case, it seemed best to focus interest on how and with what means the work in the future could be forwarded and at the same time reserve all the values of the decentralized plan of action. During the greater part of the three days at Chicago, the Board of Directors and the Committee on Coordination with the Editor of the Journal, the Director of Research and the Executive Secretary worked as a single body. This was done because many of the problems are interlocking. One of them cannot be easily solved without like solutions being made for others.

Finances. The Finance Committee spent a full day making a study of all items of the budget and attempted to forecast the future with respect to the total program of the Association. It was found that since 1945, the expenses for publishing the *Journal* have more than doubled. Another increase for the present volume of approximately ten per cent had to be made. There has not been a single year since 1945 in which an increase in cost has not been necessary—all the

way from ten to twenty per cent each year. Within the framework of the present budget, therefore, it was necessary to find funds sufficient to advance publishing costs to more than \$10,000 for the year. The budget as a whole will in all probability balance for the year. Changes made at Chicago were within the total budget and no reserves were drawn upon for that purpose.

It became clear to the Finance Committee and their recommendations were approved by the Board of Directors that unless basic and dependable income can be increased, the full program outlined in 1945 cannot be implemented. The Board of Directors will submit to the membership at the Des Moines convention a proposal to increase the dues from \$50 to \$60 per year.

In order to reduce expenses, it was voted to pay only for traveling expenses in the future for the Board of Directors and the Committee on Coordination. All other expenses, such as board and room, etc., must be paid by the individual members or by their institutions. Should the members of the Association approve the proposed increase in dues, it is the expectation of the Board of Directors that all members of Research Committees may be brought to the summer meeting in 1951.

Committee Work. In order to take up some of the slack in the work of the Research Committees, plans have been made for two full

days of committee meetings at Des Moines—March 4 and 5. It was voted also to extend the membership of each committee from four to six so that each region would have fuller representation on each committee. Furthermore, plans call for a much closer cooperation between the national committees and similar ones in each regional association or council. It is suggested that a member of the national committee might also become one member of his regional committee. This would tend to give a closer tie-in between the work at the national and the regional levels. It was thought that committees might be organized for each of the five major assignments by regional membership. This idea, however, was not approved because there was a deep conviction that each committee should have representation on a national basis. It was felt that if a committee were organized within a different region, there would be opportunities for it to meet more frequently. The tie-in procedure may be the solution to the problem of getting both national spread and regional participation. It aims at the further extension of the grassroots ideal.

In further consideration of regional organizations, it is an encouraging fact that today at least a dozen universities are willing to cooperate in research projects. In 1945, there were not more than two or three which were possibilities. It is thought that several could and would cooperate with re-

gional committees while at the same time one great university might still be selected as the headquarters for national research. Universities need the council and advice of junior college people in their programs of teacher preparation, in seminars and workshops as well as in research. The general scheme for further decentralization would utilize many resources in various sections of the country. For example, the University of California at Los Angeles is cooperating with studies in general education. There is a feeling that this kind of work should be extended for other areas of inquiry to several universities.

Honor Societies. Recently, the Association has been petitioned to approve several national honor societies. Dr. Reynolds was asked to find a graduate student, if possible, who would make a study of functions and advantages of local and national honor societies and report to the Board of Directors for further consideration and action.

Association Membership. With the expiration in 1951 of the five-year time limit for provisional members to qualify for active status, the membership committee of the Board made certain recommendations. Because these involve constitutional changes, they will need to be considered at the next annual convention. The proposed change would be in Article III, Section 2, and would be an addition to the present standards: "At their dis-

cretion the Board of Directors and the Membership Committee may consult with regional or state junior college associations or councils as to the eligibility of institutions for membership and may accept such recommendations in lieu of the foregoing provisions." The "foregoing provisions" refer to all stated standards as now set forth in the constitution.

The Membership Committee makes further recommendations with respect to individual memberships of teachers and staff members to this effect: that state and regional associations offer a single package membership to individuals in junior colleges which will carry privileges in both the local and national association. The amount of dues to be established by the local associations shall provide for \$2.50 for the national association which shall carry subscription to the *Journal*, attendance at and participation in the national convention. Voting, however, shall be one vote for each institution as an institution. The objective of this plan, to be acted upon in convention, is to secure greater interest, participation, and more extensive reading of the *Journal* by teachers and staff members in local junior colleges. It is felt that at least one half of the 20,000 junior college teachers should be taking a far more active part in the junior college movement through the Association.

Research Projects. Dr. Colvert reported that three major projects

are under way at the present time: Certification of junior college teachers by the several states; public relations; and evaluation of the effectiveness of the workshops.

National Convention. Plans for the national convention call for something of a departure from previous procedures. It is expected that committees will submit to the membership a list of 21 fields of interest. This plan will give every delegate an opportunity to attend one of the sectional meetings and participate fully in the discussions. During the final morning, a summary of the several discussion groups will be made by an expert consultant.

National and International Affairs. The Board authorized a letter to United Nations with approval of its stand taken in the Korean affair to stop unprovoked aggression against the Korean Republic. It further authorized the Washington office to make a survey of the personnel and facilities of junior colleges with a view to their possible participation in national preparedness and defense. It is under-

stood that the National Defense Establishment plans to utilize educational institutions as far as practicable and as far as institutions are willing to cooperate. The Board further provided that should national emergencies arise, it might be necessary to plan for an emergency program to augment the regular program.

The Next Steps. The Board authorized the Executive Secretary to visit as many of the regional association meetings as possible and carry to them the story of the Board's wishes with respect to the future work of the Association. The Board further authorized the Secretary to act as liaison officer between the Association and the Federal Government with special interest at this time in international affairs.

Final Observation. The weather was perfect. The University of Chicago went all out as usual to make the meeting one of real pleasure. Chicago's facilities for the summer meeting are just about all that one could wish for and the prices were very reasonable.

Notes on the Authors

MARION GAITHER KENNEDY

Exploring Teaching as a Career with Junior College Students is based upon the experience of GORDON D. AUMACK, instructor and counselor at Compton College, and CORNELIUS H. SIEMENS, director of Compton College, Compton, California, in setting up and teaching an introductory course in teacher education for junior college students in the years 1948-49 and 1949-50.

In his article *General Education and the Teaching of the Social Sciences*, JUDSON REA BUTLER, Dean of General College, Boston University, tells how Boston University has successfully revised the conventional liberal arts curriculum in order to provide an integrated program of general education.

C. E. TURNER, State Supervisor and

Teacher Trainer of Trade and Industrial Education in Boise, Idaho, and editor of the *Idaho Industrial Training News* has written an informative article, *Industrial Training in Junior Colleges* which shows the value of the junior college as a medium for industrial training.

HERSCHEL T. MANUEL, Director of the Testing and Guidance Bureau of the University of Texas, who reviewed three books in the March, 1950, *Journal* has written an interesting summary of *Comprehensive Examinations in a Program of General Education*.

Notes on MIRIAM MINTON SCHLEICH, W. F. RABE, and BROTHER I. LEO were inadvertently included in the September, 1950, *Journal*.

Recent Writings

JUDGING THE NEW BOOKS

Paul L. Dressel and Others. *Comprehensive Examinations in a Program of General Education* (East Lansing, Michigan: Michigan State College Press, 1949), pp IX-165.

Michigan State College created in 1944 an administrative unit known as the Basic College, in which all freshmen and sophomores of the entire institution are enrolled. This college has four objectives, according to Dean Rather, author of the first chapter of the volume: (1) "to provide a common core of educational experience that shall be shared by all students, regardless of their special interests"; (2) to improve the counseling of students; (3) "to recognize in its program the needs of those who do not go on to qualify for a degree"; and (4) "to recognize students as individuals" in spite of a large enrollment (8,350 in 1946-1947).

Seven "basic courses" are offered: Written and Spoken English, Biological Science, Physical Science, Social Science, Effective Living, History of Civilization, and Literature and Fine Arts. The student must take the first of these and four of the other six, including either Biological or Physical Science, Social Science or Effective Living, and History of Civilization or Literature and Fine Arts.

With these may be combined courses in specialized fields such as agriculture, home economics, or business. Thus the student may complete a two-year program leading to a two-year certificate or simply prepare for advanced work in other divisions of the college.

With the opening of the Basic College, a Board of Examiners was established to provide a system of comprehensive examinations for measuring attainments in the seven basic areas. The Board is administratively independent of the instructional department but has the cooperation of the departments in preparing the examinations.

Grades and credits in the basic courses are given upon the basis of the comprehensive examinations alone. In fact, under certain conditions students may be admitted to the comprehensive examinations before they have completed the courses offered, and, if they are successful, receive credit.

Comprehensive Examinations in a Program of General Education is an account of the experiences of the examining staff during the first three years of the program. Following the introductory discussions, seven chapters are devoted to the seven basic areas, each written by an examiner in the area under consideration. These chapters give an interesting insight into the

techniques of test construction, with generous and helpful illustrations of items constructed. The final chapters deal with "problems and procedures in administering comprehensive examinations" and "reactions to the program."

This book will be of interest to junior-college teachers and administrators who wish to learn more about basic courses, comprehensive examinations, or techniques of measurement. Although the separate board of examiners is distinctly a large-college organization, the discussion has value for the small college as well. The lone teacher of a course will find suggestions for the improvement of his own examinations, and the student of education will find fruitful topics for discussion. The book is written at a level to be understood by the non-technical but thoughtful reader.

On the technical side the method of building an examination and the emphasis upon understandings and critical thinking in the examination merit special study. The techniques of test construction are illustrated, and many examples of items are given. The discussion will be helpful to teachers and examiners who are working with the test-preparation problems that go beyond information and simple skills.

The idea of giving credit on the basis of comprehensive examinations, "in some cases with no enrollment in the course at all" (an idea not new or peculiar to this

program), intrigues the present reviewer. Apparently, it is assumed that this is good. Perhaps it is, certainly it can be if it opens a better educational opportunity to the student than would be had by taking the course. The plan seems to imply (1) that a course has a certain "ceiling" which sets a limit to growth; or (2) that the instructor is unprepared to stimulate and guide his more capable students; or (3) that the time saved will be better spent in another course, a course better adapted to the level of scholarship already attained. It would be interesting to discover just how in fact the time saved is spent.

There is indeed the possibility that giving credit by examination will cut short the total time to be devoted to formal education. If the goal, for example, is a bachelor's degree and the time may be cut from four years to three by examinations, why use the fourth year? If the fourth year is to be spent in a professional school, the argument for economy of time might be compelling. If it means, on the other hand, that the student will be exposed to formal education three years instead of four, the answer is not so clear. Is it supposed that college has just so much to offer and that the time for taking on this fixed amount of culture is the important variable? If so, it would seem a great waste of time and money to permit the gifted to spend four years on a task that is for them only a three-year or even

a two-year job. Is it not possible, however, that the third and fourth years can be made productive even for gifted students? Is it not a little risky to encourage a talented youngster to cut his education short simply because he can reach in a shorter time the goal set for the less able?

The reader may wish to know more of the two courses, "Effective Living" and "Social Science." In Chapter III we are told that "Effective Living may be called a course in the psychology and philosophy of human behavior," that its purpose "is to help each person recognize, analyze, and solve problems which he meets as an individual, as a member of a family, and as a member of other groups," and that the fields which have seemed most useful are philosophy, psychology, sociology, home economics, and education. The problems are "the core around which content is developed." The course in Social Science, according to Chapter VI, "tries to aid students in understanding fundamental and persistent problems of modern society." It is said that, "the particular function of Social Science in the program is training the understanding of the social, economic, and political problems of group living."

The title, "Effective Living," could well designate a course which cuts across other fields—such as biology, hygiene, and even the fine arts—as well as the social sciences. It seems to be an attempt to

organize materials on a new basis, which pays no attention to traditional lines of cleavage. Yet its material is restricted; it has to be. Not everything can be presented in a single course. The materials of education must be presented serially for the simple reason that they cannot be presented or apprehended in a single exposure. Perhaps the two courses, Effective Living and Social Science, will provide the basis for an evaluation of two contrasting methods of organizing materials. Both seem pointed toward the solution of problems, and some of the problems at least seem to be in the same general field.

Reactions of staff members and students to the program of examinations are given in the concluding chapter. "Some approve the program wholeheartedly. Others accept it with reservations. Still others are flatly opposed to any system which removes the instructor's control of student grades." The majority of both students and faculty are said to approve the use of the comprehensive examination as a uniform basis of grading. They approve also the giving of credit on the basis of examinations to students who have spent less than the normal time in the course. The faculty values the fact that "the examinations require integration of a year's work . . . , but only a minority of the students recognize it as a desirable feature." A majority of both students and faculty would have term grades

count as part of the final grade for a course. The fact that the comprehensive examination alone determines the grade in a basic course is said to be the feature of the program most disturbing to faculty and students.

As a final word by the reviewer

it should be recalled that the report deals with the period, 1944-47, and like other printed accounts runs behind the current situation. Doubtless a supplement as of today would add important information and conclusions.

Herschel T. Manuel

Selected References

H. F. BRIGHT

Frazier, Alexander. "General Education in the Junior College. Lessons from the High School," *The School Review*, LVIII (April, 1950), p. 201-210.

In this article Alexander Frazier, curriculum consultant at Phoenix Union High Schools and Phoenix College, Phoenix, Arizona, discusses the question of general education in the junior college in the light of the experience the high schools have had with it.

With general acceptance of the idea that public education should continue for many students through grade fourteen comes a self-realized responsibility on the part of the junior col-

leges and a pressure from the units of education above and below it to develop this vital area of general education. But for several reasons there has been a rather general failure of the junior colleges to fulfill their obligation in this field.

First, the junior colleges have held that their major function is to provide for the needs of all students. Many students feel that their needs involve only vocational preparation. Thus it has been quite difficult to reconcile this attitude with the notion that certain courses should be required of all students.

Second, the general attempt on the part of the junior colleges to develop to the fullest possible extent terminal or vocational type education and, at the same time, provide transfer courses

to those students who are planning to continue in higher education has made very difficult the problem of deciding what possible courses should be required of all students.

Since, in the third place, the junior colleges have made their offerings both general in scope and almost completely elective and have developed many different courses, it would seem that provision for the wide variety in interests met by the present offerings might be stifled by a requirement of certain general courses common for all students.

The fourth and most important deterrent has been the fear that the requiring of certain courses would cause many students to drop out of school, thus depriving the student of education and the college of students. The tremendous heterogeneity of both ability and preparation of junior college students makes the general education program difficult of accomplishment.

However, the problems which are at present troublesome, are not new. Higher education is now undergoing a type of evolution which occurred in the public schools some years ago. It is the result of a general acceptance of the belief that higher education should be available to all rather than to students selected either as to intellectual ability or as to economic wherewithal. Several principles learned by the high schools can be applied to the problems faced by the junior colleges. Four basic postulates governing general education for the masses are the following.

1. *Sound curriculum development for a program of general education is built upon a knowledge of life-needs of learners.*

A faculty may begin with life-needs which are common to all learners of the age group and proceed to needs peculiar to the social framework of the college and the community.

2. *Sound organization of learning experiences is based upon a topical or problem approach rather than on a chronological approach.*

Problem areas which may serve as

examples are marriage and family life, citizenship, vocational orientation, consumer education, and personal and community health. A good example of the functional approach which should be used is that of the typical senior college course in basic communications. Here an attempt is made to integrate the various aspects of human communication through a problem-solving approach. Frazier points out that when a course is of the survey type it is not always necessarily general education.

3. *Sound development in the general education curriculum is based on the use of multiple-learning materials and experiences.*

The versatility and utility of audio-visual devices has been illustrated both in high school programs and in wartime experimentation on college campuses. The field study, the community survey, the use of speakers and materials to be found in the local environment—all are valuable aids to learning. Reading materials should always provide for varying levels of proficiency.

4. *Sound general education is based on a concern for, and evaluation of, individual growth.*

Frazier argues that a realistic appraisal of life needs and a problem-solving approach lead naturally to individual learning efficiency. Evaluation of the program must be based upon measures of its contribution to individual growth.

This author urges caution in instituting a general education curriculum and recommends that the college move slowly toward required courses, test them first as elective courses, and carry on a continuous evaluation of them.

MAX R. GOODSON, "What's Different about Teaching Adults?" *NEA Journal*, XXXIX (April, 1950), 274-75.

Dr. Goodson holds that the methods of adult education need not be different from methods used at any other level.

The learning situation is different only in that adults are not required to attend school: many adults are not free to do so, and those who do attend school will attend because they feel satisfied that the experience is worthwhile. Thus no unique factor is involved. However, the power of self-determination held by adult students constitutes an effective test of the methodology used. Younger students many suffer in comparative silence under poor teaching. Adult students will refuse to do so.

Goodson sets forth the thesis that a common methodology of education exists now and is becoming more clearly delineated. This coming methodology, he believes, has the following four features:

1. *The group is the unit of educational planning and functioning.* Individuals learn in the group atmosphere. The group member feels that he is aided by other members and that he shares common experiences with them. In this situation the student

finds an opportunity to make choices and decisions and to try them out on other people.

2. *Change is facilitated through a series of recurring cycles of decision, action, and fact finding.* Planning must involve decisions based upon research and resulting in action. Proper method in group leadership includes getting members to participate and to communicate their ideas freely.

3. *The change process is controlled.* The change process is controlled through collaboration, by the requirements of the problem to be solved, by the requirement that the change be educative in character, by the experimental approach and by social factors.

4. *The rôles of the teachers.* The teacher acts in the methodology described by Goodson as a group leader, a technical consultant, a trainer and counselor. Nowhere does he see the rôle of the teacher as a directive one except insofar as the group may diagnose itself as needing various types of training.

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MARGUERITE WATERS, "A School-Community Occupational Survey," *California Journal of Secondary Education*, XXV (April, 1950), 201-4.

Miss Waters describes a survey made

by Tulane Union High School of occupational opportunities in the community. The Tulane survey furnishes a useful pattern for similar surveys which might profitably be made in many different communities. Few junior college students, for example, know much about the economic structure of the community in which they live. Few faculty members use sufficient illustrations from the local scene to sharpen their presentations of social and economic matters. Such a survey should help to increase interest in and use of the factors in the local situation.

The method of the survey was as follows. A three-page questionnaire was prepared and printed and a mailing list was drawn up. The first sheets of the questionnaire were mailed out with the explanation that they would be picked up later by the interviewers. Faculty members spoke before service and other clubs on the project, and interviewers were recruited, instructed, and put to work. Reports were brought back and tabulated.

The finished report showed that 75 per cent of the businesses in the town employed five or fewer employees. Over 400 different jobs were found. Data on the employment qualifications for various jobs were compiled. A mass of information was made available to students and to their teachers concerning occupational opportunities in their own community. Many job areas appeared that were unknown to faculty and students alike and about which more information was needed. All information gathered was subsequently made available to serve as a basis for curriculum revision and organization, so that course offerings might more adequately meet the needs of the community. And last but not least, people in the community became aware of and actively participant in the work and planning of the school.

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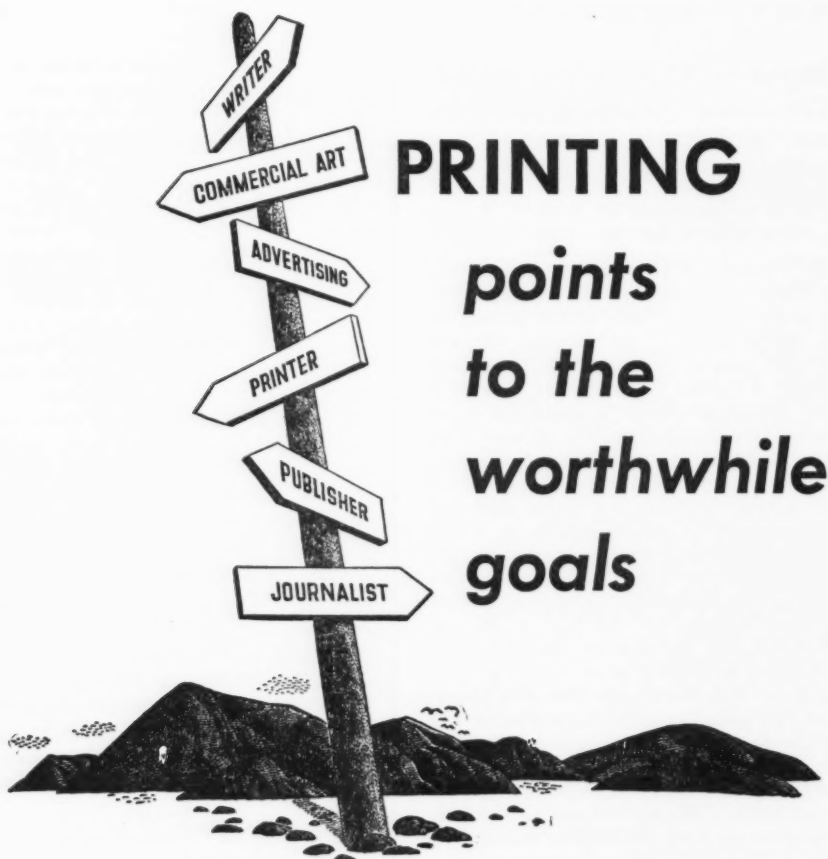
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